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The late prehistory of the nomos of Ioannina, Greece : new approaches to the analysis of ceramic typology and site distribution

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THE LATE PREHISTORY OF THE NOMOS OF IOANNINA, GREECE: NEW APPROACHES TO THE ANALYSIS OF CERAMIC TYPOLOGY AND SITE DISTRIBUTION

by

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London 2004

Abstract

THE LATE PREHISTORY OF THE NOMOS OF IOANNINA, GREECE: NEW APPROACHES TO THE ANALYSIS OF CERAMIC TYPOLOGY AND SITE DISTRIBUTION

This thesis aims to use statistical, computing and GIS methods to present, reveal and explore aspects of material culture in the landscape of the nomos of Ioannina, northwestern Greece, during Late Prehistory (corresponding to the Late Bronze and Early Iron Ages of southern Greece). It concentrates on pottery and site / findspot distribution, combining new applications of typological and quantitative methods, website design, and GIS. The research exploits information from past work, as well as unpublished archaeological data from ongoing projects, rescue excavations, and personal survey, observation and research. Information from ancient and modern literary sources related to archaeology and landscape was taken into account. Global positioning readings, digitised maps and images, tabulated data and resulting graphs have also been created and exploited.

Pottery analysis focuses on the creation and application of a new typology (via methods including quantification), merging past classification schemes, and reinforced by personal post-excavation work on finds from recent, unpublished excavations at the settlement of Liatovouni in the Aoos river valley.

An approach focused on sites / findspots is based on the database creation and web application of an up-to-date Gazetteer, which serves as an expandable and exploitable site-database for the nomos of Ioannina in Late Prehistory, and encompasses all (geographical, topographical and archaeological) information available by 2003. The creation of a digital map of the Ioannina nomos (scale 1:50000, HGRS87 and WGS84 map datum), and the implementation of a Geographic Information System, are used to reconstruct aspects of the Late Prehistoric landscape and the topographical archaeology of the Ioannina nomos.

Acknowledgements

Many scholars, researchers, colleagues and friends have given me help and advice. It is very difficult to express sufficient gratitude to all those who helped me in many ways to approach, pursue and conclude this research over the years. I record here, and at appropriate places in the text, people whose services have contributed to making this research possible, with my frank apologies to any I may have missed. All remaining mistakes and weaknesses are, of course, of my own.

First and foremost, I must thank my supervisor Dr Catherine Morgan, for being a continuous source of information and ideas as well as for her patience, positive attitude and encouragement in difficult moments. Secondly, the late Prof. N.G.L. Hammond, who was the first who gave me the advice to 'Go for it'. Also, my good friend and housemate for the last few years, Dr Evangelos Tsontsis, a computing guru, for being always available and willing to sort out not a few computer problems and crises. I have learnt from Dr Tsontsis more than any computing course could ever teach me.

Many thanks should be addressed to all staff-members of the Department of Classics, King's College London, for being always there to help when needed. Also, to the staff of the Institute of Archaeology, University College London for having provided computer and photographic support for parts of my research. They have all contributed the most to my development as a researcher, field-archaeologist, teacher and individual, by providing opportunities, well-timed advice and continuous support and encouragement.

I am particularly grateful to Prof. Thomas F. Tartaron for our correspondence, and especially for allowing me to read his forthcoming 2004 publication (Tartaron in press). I owe a similar debt of gratitude to Prof. Clive Orton, who showed me the way to combine mathematics and archaeology. Prof. John Younger, who manages the Internet discussion group *AegeaNet*, and all the group's subscribers must also be greeted.

I would like to recognise the contribution of my ex-colleagues at the 12th Ephorate of Prehistoric and Classical Antiquities, Ioannina, Greece for their co-operation, and especially Ms Vasiliki Siozou and Dr Eugenia Adam. Special thanks to Dr. Kostas Zachos and Dr. Aggelika Douzougli, Ephors of Antiquities, who gave me permission to access and study unpublished material, and to use the premises, library,

resources and records of the 12th Ephorate, and who were always willing and full of enthusiasm to discuss ideas and thoughts. I would also like to thank Prof. Thanasis Papadopoulos, who helped me when needed, and Dr Kostantinos D. Politis, who kindly provided permission to use material from his projects to test quantification methods. Many thanks also to all members of the committee of the Ioannina Mountain Club (Ορειβατικός Σύλλογος Ιωαννίνων) for their help in getting and/or confirming mountain-oriented statistics.

For generous exchange of ideas and information, as well as practical help, support, and advice towards bringing this labour to completion, I am grateful to Dr David Alvarez-Mon, Dr Karim Arafat, Dr Cyprian Broodbank, Dr Ilias Choussos, Dr Georgios Demetriou, Prof. Kosmas Ferentinos, Ms Aggeliki Fragkaki, Ms Fotini Fragkaki, Dr Athanasios Gkelias, Mr Yiannis Gountoulas, Dr Chrystalla Kalogirou, Dr Konstantina Katsari, Prof. Apostolos Katsikis, Mr Nikolaos Konstantios, Dr George Koutromanos, Mr Leonidas Koutsoumpinas, Dr Kris Lockyear, Ms Penelope Matsouka, Ms Chryssoula Nandris, Dr Yiannis Papadatos, Prof. Apostolos Papaioannou, Dr Panagiotis Papanastasatos, Dr Eleni Samara-Papaioannou, Mr Michael Sarlis, Prof. Apostolos Sarris, Ms Nikoletta Stergiaki, Mr Yiannis Syggros, Dr Marilena Tsakoumaki, and Ms Heidi Voidarou. Also, to my many flat- and house- mates over the years, for being there when needed.

My research has been financially supported by a scholarship from the Lilian Boudouri Foundation, Athens, Greece. The late stages have been covered by a tuition fees grant provided by the Arts and Humanities Research Board, and a maintenance grant from a King's College London Humanities Research Studentship. Gratefully acknowledging their contributions is the least I can do. I am also indebted to the Board of Directors of the Hellenic Society for Near Eastern Studies, for providing temporary web server space for the implementation of the website of this research.

This work would not have been completed without the support of my family, and especially of my sisters Arietta and Aspasia. This work is dedicated to them, as well as to the memory of Prof. N.G.L. Hammond.

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Preface

Northwestern Greece has played a central role in the Greek and Balkan past. It was the homeland of Alexander the Great's mother, the power base of King Pyrrhus, and the sacred area of what claimed to be the most ancient oracle in the Hellenic world (that of Zeus at Dodona). Although the area's prehistory is of importance, our approaches to its material culture are still poorly defined. Archaeological research during the last few decades has broadened our horizons by providing information with which to draw a general outline of the area's cultural evolution in prehistory.

More than a hundred archaeological sites of Palaeolithic period have been discovered in northwestern Greece in the course of the past two centuries. Almost all are located close to rivers and lakes. Where systematic excavation has occurred (at Kokkinopilos, and in the caves at Asprochaliko, Kastritsa and Kleidi), Middle and Lower Palaeolithic material consisting of animal bones, flakes, flints and other human tools has been found. Many similarities have been attested between the Palaeolithic archaeological records of Epirus and Southern Albania (for the Palaeolithic of northwestern Greece, see Papadopoulos 1974; Adam & Bailey 1994; Kotzabopoulou et al. 1996; Hammond 1997b: 45).

During the Neolithic, northwestern Greece has produced evidence of human occupation and activity, albeit not as intensive as elsewhere in Greece (in Thessaly or the Peloponnese, for example). Displaced finds of pottery and flints considered to be Neolithic have been published from several sites, but clear evidence of settlement is slight (Douzougli & Zachos 2002).

The Early and Middle Bronze Ages also do not appear to have been periods of prosperity. Very few sites have been identified, and finds consist almost exclusively of handmade pottery (with relief decoration as well as the so-called 'Minyan' ware). Tumulus burials are also attested. Since these last two elements have been regarded as characterising the Middle Bronze Age in central-southern Greece, their presence in the northwest has been used (from Hammond 1931/2 onwards) to support arguments for the 'coming of the Greeks' from the north and through northwest Greece.

During Late Prehistory, major changes are observed, with many more sites than previously, new contacts to the south and north, and an overall increase in archaeological finds. The Late Bronze Age is characterized by settlements with Mycenaean-style architecture and artefacts (notably pottery and bronze swords) mixed

with northern objects and evidence of continuing northern contacts (for a detailed overview of the Mycenaean presence in Epirus see Soueref 2001). After the fall of the Mycenaean palaces, contacts with the north continued and were enhanced, leading to interpretations related to the Dorian Invasion (advanced from Hammond 1931/2 onwards).

This thesis focuses on the Late Prehistory of the Ioannina nomos. Part 1 offers an introductory presentation of research aims and focus, sources of information, the geographical setting, new administrative realities and past research. Part 2 approaches old and new pottery classification schemes via methods including quantification, and proposes the application of a merged classification scheme. Part 3 assembles late prehistoric evidence into an up-to-date Gazetteer of Late Prehistoric locations of the Ioannina nomos. Part 4 moves the Late Prehistory of the nomos into the digital era by the creation and application of a website / database, a digital map, and a geographical information system of preliminary character.

In reading this thesis, the following points should be taken into account:

(a) Some anglicised Greek terms are used instead of their equivalents in English. These include 'nomos' and its plural 'nomoi', instead of 'prefecture' and 'prefectures', as well as 'demos', 'demoi', 'koinotita' and 'koinotites', for 'municipality', 'municipalities' 'community' and 'communities' respectively. This is because I consider that the Greek words express significantly different concepts to their English equivalents. This is not the appropriate place to discuss and analyse these differences, but a good starting point for further information is www.ypes.gr (Greek Ministry of Interior).

(b) Central to the thesis is the Gazetteer in chapter 3.3. Each site / findspot has been given a site number for reference, and this number always accompanies site names throughout the thesis, as e.g. Liatovouni (site # 6). An Index of site / findspot names and site numbers is offered in Appendix V.

(c) In part 2, the codes FS and FM followed by a number refer to Furumark's classification on Mycenaean pottery (Furumark 1941).

(d) All website references in this thesis were last checked on 20/09/2004. They are presented following the main Bibliography in order of appearance in the thesis (by chapter).

(e) Accents and breathings are used for pre-1981 Greek publications. In 1981, the Greek Government ended the use of the polytonic system in schools and for official documents

and publications. However, some authors kept the polytonic system in their post-1981 Greek publications (Papadopoulos 1987e; Papadopoulos & Kontorli-Papadopoulou 2003).

(f) Plates and maps taken from other publications have been altered very little. For Greek maps, names of cities, towns and villages were left in Greek, and a certain familiarity with Greek is assumed.

(g) Since the maps and/or triangulation points of the Γεωγραφική Υπηρεσία Στρατού (Hellenic Army Geographical Service, or HAGS) have been used for part 4 of this thesis, any future use of the digital maps thus produced is subject to prior permission both from the author of this thesis and HAGS. No exceptions are allowed.

(h) I used the following pieces of computer software: Microsoft Word 2000, Microsoft Excel 2000, Microsoft Access 2000, Microsoft PowerPoint 2000, Microsoft FrontPage 2000, Microsoft Internet Explorer 6.0, ESRI ArcView GIS 3.2, TopoView 2.0, AutoCAD 13, and Adobe Photoshop 5.5.

(i) Papadopoulos & Kontorli-Papadopoulou 2003 and Vlachopoulou-Oikonomou 2003 were published in autumn 2004, between the submission of this thesis and the viva voce examination. They are publications of the University of Ioannina of general descriptive character, whose main purpose is to serve teaching needs for undergraduate students of Greek archaeology. I have therefore added them to the bibliography, but not to the site gazetteer, the database and the website in this thesis. References to these books will appear at appropriate places in later versions of the database and the website initiated in this thesis.

(j) It is important to clarify the fact that the choice of boundaries (what is nowadays the Ioannina nomos and its subdivisions in demoi and koinotites) does not imply that they held any significance for the Late Prehistory of the region. Different political and territorial boundaries have shaped landscapes at different times according to various needs and different political situations and realities. Modern archaeological practices and practicalities are affected by modern established administrative and political realities, and the Ioannina nomos is no exception. The choice of boundaries reflects modern archaeological administration, and therefore aims to facilitate research, archaeological practice and information retrieval. It is by no means intended to imply that the modern Ioannina nomos was in antiquity a discrete or bounded cultural entity in its own right.

PART 1

A STUDY OF THE IOANNINA NOMOS IN LATE PREHISTORY:

BACKGROUND TO THE RESEARCH

1.1 Introduction

The area of northwestern mainland Greece (the geographical area of Epirus consisting of the *nomoi* (prefectures) of Ioannina, Thesprotia, Arta and Preveza, see pl. 1a, 1b) has benefited archaeologically in the last two decades from a number of research projects, conducted **a)** by individuals (Andreou 1994; Andreou S. et al. 1996; Soueref 2001) adding to the influential pioneering works of Hammond (1967) and Wardle (1972), **b)** by the Archaeological Society of Athens (see *Πρακτικὰ τῆς ἐν Ἀθήναις Ἀρχαιολογικῆς Ἑταιρείας* volumes covering years 1990 - 2001 [that for 2001 was published in 2003]), and **c)** by the Greek Ephorates of Antiquities often in collaboration with Greek and non-Greek universities (both rescue and systematic archaeological works, see *Αρχαιολογικόν Δελτίον*, volumes covering years 1990 – 1997 [the 1997 volumes were published in 2003]).

Recently, major construction projects, such as the Egnatia Motorway[1] (the first motorway in Greece to be designed and built from scratch, which connects the town of Igoumenitsa on the west coast of Epirus with Alexandroupolis in East Thrace), and the associated archaeological works, have also contributed to enhanced archaeological activity and research in the nomoi of Thesprotia and Ioannina in Epirus.

Between 1991 and 1995, a programme of archaeological research, known as the Nikopolis Project, was implemented in the Preveza nomos, southwestern Epirus, Greece (Wiseman & Zachos 2003). This Project emphasized 'the use of systematic surface survey and paleoenvironmental reconstruction to arrive at explanations for changing patterns of human activity across the landscape over time' (Tartaron 1996, xiii), and led to the recent impressive discoveries at the Roman and Byzantine site of Nikopolis (Zachos 2003).

This thesis aims to follow the research track described above by focusing on the Ioannina nomos (pl. 1a). Its contribution is addressed in the following subsections.

1.2 Defining the Research

The thesis title ('The Late Prehistory of the Nomos of Ioannina, Greece: New Approaches to the Analysis of Ceramic Typology and Site Distribution'), points to a chronological focus (Late Prehistory), a spatial focus (Ioannina nomos, Epirus.

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[1] for an overview of the Egnatia Odos construction works see http://www.egnatia.gr/flash/en/index.html, last visited 20/09/2004.

northwestern Greece) and an archaeological / topographical research focus (ceramics and sites / findspots). In this introductory chapter, I address the overall line of research, in an attempt to clearly define, justify and comment on its focus, aims and sources.

1.2.1 Spatial and Chronological Focus, Aims and Research Questions

This thesis focuses on the Ioannina nomos (pl. 1a), utilising information published up to the end of 2003, unpublished archaeological material, data derived from the Liatovouni Project (Douzougli 1994; Douzougli 1997) and the Egnatia Motorway construction works, as well as computer and information technology (digital mapping, website design and data implementation, and Geographical Information Systems). The essential aim is four-fold:

(1) <u>to re-evaluate material culture by offering a new ceramic typology</u>

The present study offers the preliminary statistical results of a new ceramic typology developed in Ioannina as a result of post-excavation work on material from Liatovouni (chapters 2.2.4 and 2.2.5, site # 6), and in relation to ongoing research on pottery from other Epirote sites such as Krya in the Ioannina nomos (Zachos 1997), Maratovouni in the Arta nomos (Karatzeni 2001), and many sites in the Preveza nomos (Tartaron 1996: 97-188). On the basis of my statistical analyses of the Liatovouni pottery, and in conjunction with other assemblages, potential chronological and other refinements can be introduced, and a revised pottery typological scheme covering Epirote late prehistoric wares is proposed (chapter 2.3). At this point it must be stressed that a solidly based chronology for the Late Prehistory of northwestern Greece would require further archaeological work and study beyond the limits of this thesis, which will hopefully serve as a positive contribution and starting point. I also expect the merged pottery classification scheme proposed to be valuable in archaeological training, especially in terms of late prehistoric pottery of the Ioannina nomos and Epirus as a whole.

(2) <u>to gather and take full advantage of all previously published and new information available</u>:

Unlike other areas of Greece (especially the southern mainland and the Aegean), the Ioannina nomos lacks abundant information about Late Prehistoric sites and their contexts. There is little chronological definition within Late Prehistory until the appearance of Bronze Age Mycenaean objects, mostly found in graves. The archaeological record consists of findspots and/or features rather than archaeological sites. Local pottery cannot be securely and closely dated in the absence of recognisable

imports. Lithic assemblages can provide some insights, but, apart from the studies of Tartaron (1996) and Tartaron et al (1999), the lithic industries of the Epirote Bronze Age have never been explicitly studied and therefore very little is currently known. Hence, gathering and taking full advantage of all information available is critical for archaeological research in the Ioannina nomos. This exercise has benefited from previous analogous attempts focused either on northwestern Greece or Epirus as a whole (Wardle 1972; Papadopoulos 1976), or on the Mycenaean archaeological record (Soueref 2001), or on areas adjacent to the Ioannina nomos (Tartaron 1996 on the Acheron Valley in the Preveza nomos). Recent data are included and I have made refinements where necessary. Non-archaeological supporting information has been assembled, consisting of topographical, historical, literary and bibliographical data. In terms of methodology and theoretical perspectives, I have considered and evaluated models, views and perspectives, most of which have been expressed within a specific northwestern-Greek archaeological context (Wiseman & Zachos 2003).

The outcome is the up-to-date (November 2003) Gazetteer of Late Prehistoric sites in the Ioannina nomos presented in part 3.

(3) <u>to offer an exploitable and expandable digital tool that will serve as the basis for advanced data management and future research</u>:

This study also employs original data of (and in) electronic format, acquired during several field seasons and periods of archaeological survey and museum work. The collection of data mainly consists of thousands of position measurements taken and calibrated by Global Positioning System (GPS) devices, digital photographs of both sites and finds, and digitised material from books and publications relevant to the theme of the research. The outcome enhances the Gazetteer noted above by presenting a Geographical Information System (GIS) and an expandable and exploitable archaeological database created in Microsoft Access and also offered in the form of a website for the Late Prehistory of the Ioannina nomos. Apart from approaching spatial patterns and site distribution schemata, my aim is also to offer to researchers with interests in the area a flexible, powerful and user-friendly modern tool that can be adjusted and adapted to different needs in different times (see part 4).

(4) <u>to offer data in digital format, that are valuable for archaeological as well as other research and practices (GPS readings, digital mapping)</u>

The GIS mentioned above is based on a 1:50000 map of the Ioannina nomos digitised by myself using paper maps from the most reliable sources (chapter 4.3, CD-ROM files in Appendix IV. and map 1). It should be noted that it is the first 1:50000

digitised map of the Ioannina nomos, including sensitive areas in the political borders between Greece and Albania (relevant restrictions and copyright information are included in chapter 4.3.3.2). This map contains the contour of the nomos, elevation contours at 100 m. intervals, rivers and water / streams. I have also plotted all Late Prehistoric sites discussed in the Gazetteer (part 3) based upon the relevant GPS readings (see chapters 3.2.3.2A and 3.3). In this way, distribution patterns in landscape corresponding to the modern Ioannina nomos, as attested by the archaeological record (Pl. 1, 2; map 1), are revealed (map 1, CD-ROM files in Appendix IV).

Within the context described above, archaeological research questions that I explore in this thesis are of both core and peripheral archaeological character: in chapter 2, I propose a merged quantified pottery classification scheme, encompassing new schemes (Liatovouni) and older typologies (Kastritsa, Krya); in chapter 3, I offer an up-to-date Late Prehistoric site-Gazetteer of the Ioannina nomos (topography, archaeology, bibliography, discussion); in chapter 4, I introduce digital data and information systems in the archaeological research of the Ioannina nomos (database, website, digitised mapping, GPS readings, GIS implementation). These chapters are preceded and followed by the introductory chapter 1 (research line, geographical setting, theoretical and methodological issues, and past research) and the concluding chapter 5 (summary and conclusions) respectively. It is hoped that my approaches will achieve the following:

- To advance pottery studies and offer the basis for further typological, chronological and quantification refinements.
- To update site information (topography, accurate positioning, finds) on the Ioannina nomos in Late Prehistory.
- To offer an expandable, exploitable and user-friendly archaeological resource and research tool.
- To initiate and establish digital data as a research tool for further studies and work.
- To help in archaeological training and educational practices within the context of the archaeology of the Ioannina nomos.

It should be noted that the archaeology of the Ioannina nomos in Late Prehistory can inform research in a wider range of subjects, including for example architecture, burial practices, metallurgy and warfare. Issues related to social, economic and

organisational structures and parameters fall within the scope of other research projects and programmes, and are only tangentally relevant here. However, due to the character of the present thesis (merged pottery types, digital data, up-to-date gazetteer), I strongly believe that parts of it will be useful for all studies related to the Ioannina nomos.

Chronological focus: defining Late Prehistory.

The term Late Prehistory as used throughout this thesis refers to the period between the Neolithic and the Iron Age as defined for this area and its surroundings (roughly modern northwestern Greece and southern Albania). Since the archaeological record of the area includes bronze implements only towards the end of the period (see chapter 3.2.3.3D), I decided to favour the term 'Late Prehistory' instead of the term 'Bronze Age' adopted by past research (Dakaris 1952; Hammond 1967; Wardle 1972; Papadopoulos 1976; Wardle 1977; Soueref 1986; Soueref 2001). Terminology which implies reference to the Three Age System therefore seems inappropriate, although as will be shown, cross-dating with reference to the Mycenaean/Late Bronze Age material culture of other regions is of great importance.

The Late Prehistory of the area here studied is dominated and characterised by what is proposed in this research as the Epirus 1a pottery class (also known a KII/III pottery class, or Krya I pottery class, see chapter 2.3.1 for details). Absolute dating of this pottery is at present fluid, given the current lack of well-stratified deposits to support a valid chronological system. On present evidence, it seems to have started immediately after the Doliana Final Neolithic, since certain Epirus 1a characteristics, along with significant differences, are first found in the pottery from the Final Neolithic site of Doliana in the Ioannina nomos (Douzougli & Zachos 1994: 14-17; Tartaron 1996: 204-207; Douzougli & Zachos 2002: 124-143). Dakaris dated the start of Epirus 1a pottery from Kastritsa to the Early Bronze Age (Dakaris 1952: 369), and Hammond suggested a date of around 2000 B.C. (Hammond 1967: 304-307). Objects of Mycenaean date, such as bronze artefacts (see Elaphotopos, site # 19; Kalpaki, site # 22) and pottery (see Mazaraki site # 60), appear with Epirus 1a pottery, and thus securely date Epirus 1a to the Late Bronze Age of Southern Greece. Epirus 1a is absent from the earliest burials at the Early Iron Age site of Vitsa in the Ioannina nomos (9th century B.C.) (Vokotopoulou 1986: 225-226). This research adopts the term 'Late Prehistory' as spanning the period roughly from post-Doliana (terminus postquem) to

pre-Vitsa (terminus antequem). It is stressed that both Doliana[2] and Vitsa[3] border and lie just outside the chronological limits of the present study.

For a more detailed presentation of the Epirus 1a pottery class and its chronological traits, see chapter 2.3.1. For an attempt to assign dates in calendar years B.C. to the Epirus 1a pottery class and to other Epirus Late Prehistoric classes, see table 2.3.7a. In the site Gazetteer (see part 3 of this thesis), the term 'Late Prehistory' is commonly used. Where individual finds have been more securely dated, their date has been added in parenthesis. In terms of chronology in calendar years B.C. and in relation to systems used for southern Greece, my research adopts the chronological framework presented in table 1.2.1a below, taken from the Nikopolis Project (Tartaron 1996: xxx), in an attempt to link my work with that of Tartaron 1996.

Table 1.2.1a: Chronological Table of Greek Late Prehistory [Table after Tartaron 1996, based upon Rutter 1993: tab. 2 (dates to LH IIB), and Mountjoy 1993 (dates after LH IIB)].

Period and Phase	*Suggested Calendar Years B.C.*
Early Helladic I	3100/3000–2650
Early Helladic II Early (Lerna IIIA–B, Thebes group A)	2650–2450/2350
Early Helladic II Late (Lerna IIIC–D, Lefkandi I, Thebes group B)	2450/2350–2200/2150
Early Helladic III	2200/2150–2050/2000
Middle Helladic I	2050/2000–1950/1900
Middle Helladic II	1950/1900–1750/1720
Middle Helladic III	1750/1720–1680
Late Helladic I	1680–1600/1580
Late Helladic IIA	1600/1580–1520/1480
Late Helladic IIB	1520/1480–1445/1415
Late Helladic IIIA1	1445/1415–1375
Late Helladic IIIA2	1375–1300
Late Helladic IIIB1	1300–1225
Late Helladic IIIB2	1225–1190
Late Helladic IIIC Early	1190–1130
Late Helladic IIIC Middle	1130–1070
Late Helladic IIIC Late	1070–1050/1030
Submycenaean	1050/1030–950

[2] At Doliana, two phases of the floor of a straw-hut have been discovered and excavated in 1990s. The floor was covered by small slabs, large sherds, animal bones and small hearths. The site has been dated to the Final Neolithic (calibrated radiocarbon dates: 3600-3100 B.C.). See Douzougli & Zachos 1994: 14-17; Tartaron 1996: 204-207; Douzougli & Zachos 2002: 124-143

[3] Vitsa has been excavated periodically from 1965 to 1995. A settlement and two cemeteries have been revealed, dating from the 9th to the 4th centuries B.C. Vitsa was particularly flourishing in the Early Iron Age (especially the 8th century B.C.), when there are more graves as opposed to later periods, stone-founded ellipsoid/circular huts, hard-packed soil floors with one hearth, and large quantities of local handmade pottery as well as imports and metal finds mainly from the Peloponnese and Western Macedonia. No Epirus 1a pottery is reported from Vitsa (for the Vitsa excavations and finds, see Vokotopoulou 1986; Vokotopoulou 1987; Vokotopoulou 1994).

1.2.2 Reasons for Studying the Ioannina Nomos

In Tartaron's words, 'in view of the paucity of information on the settlement of Epirus in Late Prehistory, one could justify the selection of almost any location for systematic exploration on the grounds that important new data would be secured' (1996: 9). More specific reasons for the choice of the Ioannina nomos in Late Prehistory as a promising research theme are presented below.

Evidence for Late Bronze Age activity in the region

The Dodoni plateau in the Ioannina nomos with its early oracle (Dakaris 1971b) and the lower Acheron Plain in the Preveza nomos (Tartaron 1996) are seen by ancient authors as areas of immense prehistoric significance for the ancient Greek world (for Dodoni see Homer Iliad, II 748-750 and XVI 223-235; Herodotus II 52-56; Aeschylus Prometheus Bound 655-660 and 829-835; for the Acheron Valley see Homer Odyssey, X 508–516 and Pausanias 1.17.5). As yet, however, the archaeological record has not so far produced evidence for a large prehistoric sanctuary/oracle at Dodoni (see also chapter 1.6.3).

It is a fact that whereas areas of significant Late Bronze Age importance lie between the Ioannina nomos and the Ionian Sea, the early phases of the Bronze Age all over Epirus are virtually undefined. Confirmation of a Mycenaean presence in the lower Acheron comes from an extensively excavated site on the hill known locally as Xylokastro, above the modern village of Mesopotamos. The site, commonly referred to as Ephyra (its presumed ancient name; Thucydides 1.46), boasts an enclosure wall widely held to emulate, or be a genuine example of, Cyclopean masonry of Mycenaean type. Excavations over more than a dozen field seasons have produced substantial amounts of imported Mycenaean pottery (for details see Papadopoulos, Th, all references 1978-1987, for an overview of the Mycenaean presence in Epirus see Soueref 2001). Just 15 km along the Ionian coastline to the north, a small but finely executed tholos tomb, unquestionably of Mycenaean design, was discovered in the 1930s on a slope overlooking Lichnos Bay at Kiperi near Parga (Papadopoulos 1981b). These manifestations of Mycenaean interest are believed to be relics of a time when merchants plied an Adriatic sea route from southern Greece to the Ionian coast, continuing north into the Adriatic, and west to Italy (Papadopoulos 1981b; Papadopoulos 1987e; Tsonos 2000; Soueref 2001: 142-147). In the Ioannina nomos, manifestation of Mycenaean presence comes in the form of random surface finds and

cist burials (Soueref 2001: 31-64). Similar finds indicate contacts with the Southern Balkans (Soueref 2001: 127-131).

The extent, intensity and nature of Mycenaean and other involvement in, or influence upon, the region cannot as yet be properly assessed. The present work aims to offer all information yet known, and assist towards reaching firmer conclusions.

Mapping the region

Detailed maps of the Ioannina nomos are not widely available, with the Road Editions map (*Epiros / Thessaly*, 1:250,000 map, ISBN: 960-8481-17-1) being the most popular modern map among walkers, travellers and researchers. The Γεωγραφική Υπηρεσία Στρατού (the Hellenic Army Geographical Service or HAGS) does not generally offer detailed maps of the Ioannina nomos, since the area lies in the Greek borders. Old maps are falling out of use, especially after the recent introduction and application of HGRS87 (ΕΓΣΑ87), the newly established Hellenic Geodetic Reference System 87 (chapter 4.3.2). Consequently, very few detailed digital maps of the area are available, and none covering the whole of the nomos. Therefore an overall, accurate and workable reconstruction of the Ioannina nomos in digital format is important not only to this research but also for many geographical, historical, prehistorical and archaeological matters. It is expected that the digital map of the Ioannina nomos in this thesis (chapter 4.3) will be used as the base map for a number of other studies, projects and activities related to the topography of the Ioannina nomos (e.g. for a revised edition of Nitsiakos et al. 1998).

Archaeology endangered by rapid and extensive modern development

It is undoubtedly true that the pace of modern development moves quickly and is capable of altering and destroying previously undisturbed landscapes at an alarming rate in many countries, including Greece. The landscape can alter significantly due to the expansion of cities, the building of country houses and villas, the construction of large-scale public works, extensive agricultural programmes and the creation and expansion of industrial zones. Limited funding and strict deadlines contribute to extensive bulldozing activity which is difficult to control.

In the Ioannina nomos, three notable projects have had an obvious impact on both the landscape and the archaeology of the region. The first involves the construction of the Egnatia Motorway traversing the nomos west to east, which has affected archaeological sites including that of the Dodoni oracle (Tziallas 1997: 8). The second

is the draining of the lake of Lapsista, a northern extension of what is nowadays the Lake of Ioannina, the so-called Pamvotis (see chapters 1.4.1 and 1.4.2 below). The third is the moving of the University of Ioannina from the city to its current campus, in the area of Dourouti, an area with archaeological remains of a settlement and cemetery (Andreou, Ioanna 2000).

It must be acknowledged that this activity is in some respects positive for archaeological research: sites that would otherwise go undetected are revealed in just this way. But I would argue that the advantages are short-lived; the remains brought to the surface are often moved away to dumps, and the sites that produced them built over. Since these events are an expected outcome of development over which little control can be exercised, the urgency of extracting as much information as possible about ancient landscapes is great.

Association with the state of archaeology in the area and with other projects

Under the new Law issued by the Greek Government, Hellenic Ministry of Culture (Greek Government Gazette, issue number 146, 13/06/2003), archaeological activity in Greece will be allocated to 39 Ephorates of Prehistoric and Classical Antiquities and 28 Ephorates of Byzantine Antiquities. Previously, the 12th Ephorate of Prehistoric and Classical Antiquities and the 8th Ephorate of Byzantine Antiquities were responsible for all archaeology-related activity in the Ioannina nomos among other nomoi. According to the new archaeological Law, the 12th Ephorate of Prehistoric and Classical Antiquities will focus only on the Ioannina nomos, and the 8th Ephorate of Byzantine Antiquities will be operating only within the Ioannina and Thesprotia nomoi (see also chapter 1.5.2). The present project will provide these Ephorates with a base map, a web-oriented database design and a geographical information system to be adapted to their needs[4].

Other archaeological projects are currently running in Epirus, such as the Nikopolis Project and its many components (Zachos and Wiseman 2003) and the Dodoni project (Petrakos 2002; Petrakos 2003). Data from these projects were taken into account in the present research, and efforts made to achieve conformity in terms of data compatibility and exploitation.

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[4] Many thanks to Drs Zachos and Adam (12th Ephorate of Prehistorical and Classical Antiquities) and Dr Kefallonitou (8th Ephorate of Byzantine Antiquities) for their continuous support, suggestions and encouragement towards this part.

1.2.3 Sources of Information

Information derived from personal field work, museum work, library work and laboratory work.

Field work involved excavation, walking and remote data collecting (global positioning readings). While I worked as an archaeologist for the 12th Ephorate of Prehistoric and Classical Antiquities in Ioannina from summer 1997 until December 1998, I had the task (and therefore the chance) of participating in excavations which offered the material for research and discussion mainly presented in part 2. The primary pottery data set was formed by the artefacts collected in the course of excavation in the Late Prehistoric settlement of Liatovouni (site # 6), during two field seasons, in 1994 and in 1997 (Douzougli 1994, Douzougli 1996, Douzougli 1997). Over that period, more than 200 m^2 were excavated, and more than 25,000 sherds weighing almost half a ton emerged from the systematic work of a team of 5 archaeologists and more than 30 workmen (chapter 2.2.5.1 below). This ceramic assemblage was analysed by myself initially in 1997 - 1998 and more extensively in summer 2001; its characteristics are illustrated in chapter 2.2.5. For comparative material, I inspected several collections in the Archaeological Museum in Ioannina, including portions of the late prehistoric assemblages from Ephyra, Dodoni, Vitsa, Krya, Doliana, and the Kiperi tholos tomb. I was also able to inspect pottery from the ongoing excavations of Megaron B at Thermon in Aitolia. All results are presented in Part 2 ('The ceramic record of the Ioannina nomos in Late Prehistory').

In terms of field walking, all data in electronic-format for the databases and the Geographical Information System were collected during the summers of 1999, 2000 and 2001. Over this period, more than 100 new and previously known locations of definite or possible archaeological interest in the Ioannina nomos were visited and revisited for testing and confirmation, and thousands of Global Positioning readings, mapping measurements and photos were taken.

Library work involved the study of documentary evidence, in the form of ancient testimonia and the descriptions of travellers, dealing with a range of themes from the natural setting of parts of the Ioannina nomos (especially the Dodoni region) to the mythological traditions involving Epirus. This class of information is relevant to several aspects of the discussion, and thus appears frequently. A final source of documentation resides in accumulated (chiefly archaeological) research on the Bronze Age of Epirus and the surrounding regions, which was incorporated at every stage of the study.

Understanding the geographical and geomorphological component was important to my understanding both of the Late Prehistoric natural environment of the Ioannina nomos and of relevant processes of environmental change. Of course, full analyses of all relevant geographical and geomorphological processes comprise the theme of other studies.

Laboratory work involved data input, web-design, digital image processing and map digitising. Results and outcomes are presented all over the thesis, including the plates and appendices.

1.3 Nortwestern Greece in Late Prehistory: Theoretical Perspectives and Models

The ultimate goal of archaeological research is to define and explain past processes by deciphering all messages from the remains of the material culture of a given time and space. The theoretical background of such processes is provided by the field of knowledge called archaeological theory, offering various themes, theories, thoughts, perspectives and models, most of them with strong links and origins in anthropology, history, ethnography, psychology and sociology. Such concepts were part of archaeological reasoning and explanation since their very beginning, but well-established bodies of theory on methods of archaeological enquiry only started to appear after the 1960s, with the emergence of the so called 'New Archaeology'. Apart from the 'old' approach, known as 'traditional' or 'diffusionistic', from the 1960s onwards, archaeological analysis welcomed the appearance of functionalist processual archaeology, the Braudelian model, punctuated equilibrium, structuralist archaeology, post-processual archaeology, Marxist and neo-Marxist archaeology, cognitive – processual archaeology, and many more theories, models and perspectives which have been widely discussed and applied (for a summary of the above concepts and relevant discussion, see Renfrew & Bahn 1991: 405-434; Johnson 2000; Hodder 2001). The archaeology of northwestern Greece in Late Prehistory could not have been unaffected. In this section, I discuss theoretical models and ideas that have been proposed for the archaeology of the Northwestern Greece in Late Prehistory, and I present the theoretical setting adopted by the present research.

The most influential model related to northwestern Greece in Late Prehistory is the traditional diffusionistic one proposed by Hammond (Hammond 1931/2; Hammond 1967: 389-395): northwestern Greece is seen as a land occupied at the beginning of the second millennium B.C. by pastoral Greek-speaking people from western Macedonia.

These people interacted with the Mycenaeans, who arrived in the 13th century B.C. and settled mainly in the Acheron Valley in southwestern Epirus. In the Late Bronze Age, new tribes arrived from western Macedonia, and pushed people to the south and the east. According to this theory, certain invading tribes from the Balkans, came 'with slashing swords' and 'thrusting spears', and brought 'a strong tribal system under monarchy' (Hammond 1967: 392). They were the so-called Dorian invaders that, according to some scholars, caused the collapse of Mycenaean palaces and led to the Dark Ages (Desborough 1964; Rutter 1975; Winter 1977). This model was adopted by Evangelidis and Dakaris in their archaeological work: based upon general similarities (in shapes and surface treatment) to Minyan ware, Dakaris considered the KIII class of local pottery found in Kastritsa to be the product of the first «Greeks» to emigrate to Epirus from the south in the Early Helladic III-Middle Helladic periods (Dakaris 1952: 372; Poursat 1987:32-32; also chapter 2.2.2 in this thesis). According to the same concept, the oracle at Dodoni served both as a political and a religious centre of major importance. From northwestern Greece, people migrated to central Greece, southern Greece, and the Aegean islands. According to this model, the Greek civilisation of the archaic and classical period has its origins in northwestern Greece.

Although this theory underpins a quite exciting synthesis, it is very difficult to test such a hypothesis in the archaeological record. For example, the concept of a Dorian invasion as the main reason leading to the collapse the cause of the Mycenaean palatial collapse is questioned, since according to other theories, the causes could have been economic factors (Vermeule 1960; Betancourt 1976), climatic change (Carpenter 1966), social unrest within Mycenaean society (Andronikos 1954; Mylonas 1966), or even changes in the nature of warfare (Drews 1993).

Another well known theory in relation to the Late Prehistory of northwestern Greece assumes that the economy was based on long-distance transhumance of sheep and goats on a 'winter in the plains, summer in the mountains' pattern (Dakaris 1972a: 54). This theory is based upon topographical and environmental particulars, such as the climatic and topographical contrast between uplands and lowlands zones, as well as upon ethnographic analogy with modern transhumant societies still operating in the area, the 'Sarakatsani' (Hoeg 1925; Chatzimichali 1957; Psychoyios & Papapetrou 1985). This model of transhumant pastoralism as an economic strategy in antiquity has its supporters (Greenfield 1988; Cribb 1991) and its critics (Halstead 1987; Cherry 1988). In his study of the Acheron Valley (southwestern Epirus) in Late Prehistory, based upon paleoenvironmental, archaeological and topographical data, Tartaron

proposes a subsistence model that combines mixed farming and short-distance transhumant pastoralism, arguing that it may apply to Epirus as a whole (Tartaron in press, chapter 9).

Special attention has been dedicated to the Mycenaean presence in northwestern Greece, with particular focus on the settlement known as Ephyra and the adjacent Kiperi tholos tomb in the Preveza nomos, considered as a maritime station servicing the Adriatic Sea trade route connecting the Mycenaean Greek world with Italy, the Balkans, and central Europe ((Papadopoulos, Th, all references 1978-1987; Tsonos 2000; Soueref 2001: 161). Although systematic archaeological work took place for more than a decade, practical reasons have not yet allowed full publication (Papadopoulos Th, personal communication), and Ephyra is only known from preliminary excavation reports. This exact function and nature of the site is yet only of speculative character. It may have been founded and built by colonists from southern Greece; it may have been just a supply station, with limited connections with the locals; it may have been created by local residents wishing to emulate the material culture of the Mycenaean world; it may have been a well-developed economic centre or the capital of a Myceneanised region. Soueref argues that Ephyra served as an organised Mycenaean centre maintaining strong economic links with local communities, who exchanged Mycenaean goods for the products of the interior of Epirus which reaching the coast via the regular movement of transhumant pastoralists (Soueref 2001: 160-164). Tartaron (1996: 22-26) accepts Soueref's ideas, and develops them using two theoretical concepts. The first is the Braudelian tripartite scheme of the *longue durée* (long-term trends, such as geographical and environmental structures), the *moyenne durée* (medium-term slower rhythms, such as social and economic cycles that may last for decades or even a few centuries) and the *histoire événementielle* (short-term history of influential events, actions and/or personalities). Tartaron sees the Mycenaean presence in Late Prehistoric northwestern Greece as a *moyenne durée* phenomenon with impacts on the local culture and society (for the three levels of historical events and analysis introduced by Fernand Braudel and their possible applications in archaeology, see Braudel 1972; Bintliff 1991). The second approach is related to the first and has to do with the notion of the 'punctuated equilibrium'. According to this model (derived from evolutionary biology), evolution is not gradual and continuous (Darwinian model), but characterised by long periods of stability interrupted by short periods of change. In terms of northwestern Greece in Late Prehistory, Tartaron argues that the Mycenaean presence was a sudden change which caused a great impact on the *longue durée* character of northwestern

Greek prehistory, and to which local communities had to adapt (on the concept of 'punctuated equilibrium' see Eldredge & Gould 1972; Gould & Eldredge 1977).

This research takes account of aforementioned models, but it was decided to put the main focus on the archaeological record. Ceramics, topography, accurate positioning and plotting of sites, archaeological material discovered, information / computing technology and brief discussion are employed in order to offer a useful record of the Ioannina nomos in Late Prehistory. Based upon my results and refinements, as well as other information, parts of the models proposed above can be tested, modified, enhanced and/or rejected by other more theory-oriented studies and research projects.

1.4 Epirus and the Ioannina Nomos: Geography and Landscape

This section reviews the geography and landscape of the study area, taking into account that the geography and climate of Epirus have not changed significantly in the last five thousand years (Loy & Wright 1972: 37-40), apart, of course, from the effects of intensive human intervention and urbanisation after the Second World War. Continuous reference to map 1 and the relevant plates is presumed.

1.4.1. The Geography of Epirus: a Synopsis (pl. 2-5)

Epirus (pl. 2) is a land of precipitous mountains, rivers, and only a few maritime plains and lagoons, while to its east Macedonia and especially Thessaly are characterised by open valleys. The dominant dividing geographical feature is the Pindos mountain chain, which forms a physical barrier running from north- northwest to south-southeast.

Epirus comprises the bulk of the northwestern Greek mainland, and has been continuously settled for a quarter of a million years (for an overview see Hammond 1997a: 34-45; also Adam 1989). In the earlier part of this period in particular, Epirus witnessed more dramatic changes of physical landscape than almost any other part of Europe, a long-term history that continues to exert an influence on present-day land-use. Tectonic activity has created a complex, dynamic and often unstable topography, subject to the impact of local ice sheets formed on the heights of the Pindos Mountains during the Glacial Maximum, and to repeated and dramatic episodes of erosion, variously triggered by changes of climate, vegetation and land-use (Higgs et al. 1967; Katsikis 1981; Soulis 1994; King et al. 1993; Waters 1994; King et al. 1997). The geology of Epirus is summarised in pl. 3b (see also IGRS & IFP 1966; Higgins & Higgins 1996: 96-99).

Epirus is mainly mountainous (pl. 2). It has the highest average altitude (714 masl) in Greece, with its highest point being 2,637 m. (the Mt. Smolikas peak). just 280m lower than Mt. Olympos in Thessaly (2.917 masl). Other high peaks are Mt. Grammos (2520 masl.), Mt. Tymfi or Gkamila (2497 masl.), Mt. Mayrovouni (2159 masl), Mt. Athamanika or Tzoumerka (2393 masl.; see also pl. 4a), and Mt. Peristeri or Lakmos (2295 masl.), all in the Ioannina nomos (Michalopoulos & Giannopoulos 2002: 38). While the average altitude of Greece is about 502 masl., 35.74% of Epirus is up to 500 masl, 51.15% from 501 – 1500 masl and the remaining 8.11% above 1501 masl[5].

Mountain chains reaching high altitudes cross Epirus from north- northwest to south- southeast, and produce an irregular relief (Sfikas 1980; Christou 2003: 174-217; see also pl. 3a). Rivers spring from the mountains and reach the Ionian Sea to the west and the Ambracian Gulf to the south, creating and expanding river valleys and deltas (Nitsiakos & Arapoglou 2001; see also map 1). Epirus' geography constitutes a continuous interchange between upland and lowland zones, forming an exceptionally varied landscape extending from the Ionian Sea in the south and west to the high Pindos mountain chain in the East. In between these chains, intra-mountain zones developed where rivers and/or tributaries break through. They are characterised by plains, river valleys and gorges. These form the most suitable areas for habitation and subsistence exploitation.

The upland / mountain zones (pl. 4) are far more extensive, and are characterised by high altitude, steep slopes and harsh winters, all of which make them unsuitable for arable agriculture. They are almost uninhabited during winter, and the pre-second world war record shows a very low population density: Higgs et al. (1967:5) cite 8 people per km^2 compared with 33 for the whole of Epirus. Lowland / intra-mountain zones (pl. 5a-b) are warmer, more manageable for cultivation, and more densely inhabited (ca.84 people per km^2).

The mountain chains that traverse Epirus from north- northwest to south-southeast form an inhospitable landscape: secure paths are rare, especially from east to west. Even modern technology and experience in road construction have failed to provide Epirus with an east to west road system able to operate free of problems during harsh winters. The only year-round routes of communication run from north to south,

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[5] Many thanks to all members of the committee of the Ioannina Mountain Club (Ορειβατικός Σύλλογος Ιωαννίνων) for their time and effort to help me confirm these mountain-oriented statistics.

since rivers and tributaries form natural paths[6]. It has been suggested (Psychoyios & Papapetrou 1985) that many of these route-systems are still followed by groups of Sarakatsani, who exemplify modern transhumance practices in the area by grazing their flocks and herds in higher and more distant regions during summer and moving to the lowlands during winter.

There are five main rivers in Epirus, the Aoos (pl. 5a), the Arachthos, the Louros (ancient Charadros), the Kalamas (ancient Thyamis) and the Acheron (pl. 5b). Their flow is shaped by, and has shaped, parts of the mountain chains described above. They run many kilometres before disgorging either into the Ionian Sea or the Ambracian Gulf. A number of tributaries increase their volume and vigour, making them quite difficult to cross, especially in the winter (Hammond 1967: 16, n.1). This vigour has played a major role in creating series of canyons and gorges (e.g. pl. 4b). It is also worth noting the prominence of bridges in the Ottoman record, since these were usually built over key (and rare) crossing points and show signs of continuous repair, probably after the harsh winter period. However, following the Second World War, human intervention has dramatically reduced these rivers' volume and vigour by extensive and intensive water exploitation, mainly for irrigation and hydroelectric generation.

Rivers (pl. 11b) defined the main communication systems throughout the Epirote past. They affected and established road networks since antiquity, and had their own historical geography. We know that the swampy area around the present mouth of the Acheron was a large port in Classical times, since according to Thucydides (1.46), 150 ships under the command of the Corinthians were moored there before the battle of Syvota in 433 B.C. while Cassius Dio (50.12.2) reports that 250 ships of Octavian were anchored in the bay just before the battle of Actium in 31 B.C. Rivers must also have been more navigable in the past and the coastline more diverse. It is believed (Hammond 1997a:12) that throughout antiquity, the river Aoos was navigable up to Apollonia, Thyamis up to Gitani, Arachthos up to Ambracia (modern Arta), Louros up to Bouchetion (modern Kastro ton Rogon) and Acheron up to Kastri.

Let us expand on the rivers of Epirus, since they all pass and/or rise from the Ioannina nomos and comprise major landscape features. The *Aoos* is the largest and longest river in Epirus (80 km in Greek territory alone), reaching 400 to 1300 masl. along its course (Zalidis & Mantzavelas 1994; see also pl. 5a). It rises in the eastern part

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[6] It has to be noted that the Egnatia Motorway, still under construction during the writing-up of the present work, will hopefully provide a secure and problem-free year-round East-to-West road network within the first quarter of the 21st century.

of the Ioannina Nomos on Mt. Avgo (2160 masl.) north of Metsovo, in an area known as Πηγές Αώου (the Aoos springs). The area has recently been exploited for the formation of an artificial lake of the same name (although the excess waters of the lake are emptied in the Arachthos River) by the Greek Public Electricity Company (DEH) for their nearby hydroelectric station (Theodorakis et al. 2000). The Aoos runs WNW through the mountains, towards the town of Konitsa and just south of the Liatovouni Hill, in the area of the Liatovouni excavations, central to this research (chapters 2.2.4 and 2.2.5). In the Konitsa valley, the Aoos is joined by one of its main tributaries, *Voidomates*. Before it crosses the Greek-Albanian border, it receives another major tributary, the so-called *Sarantaporos*, which rises in Mt. Grammos. Having been joined by tributaries from the whole river system of northern Epirus and southern Albania, it crosses southern Albania from east to west and disgorges into the Adriatic at a point just north of the city of Avlona.

The Aoos and its tributaries have created many gorges and canyons full of wild flora and fauna (Nitsiakos & Arapoglou 2001: 23-30). These are still navigable in many parts. Voidomates is such a case; it rises in the Vikos Gorge (pl. 4b) and discharges into the Aoos in the valley of Konitsa (Nitsiakos & Arapoglou 2001: 39-45). Voidomatis has become famous in the archaeological world for the Palaeolithic material discovered along its course, especially from the site of Kleidi (Bailey 1992; Bailey 1997).

The *Arachthos* river in the mountains south of Metsovo, runs south through the valley of Arta and after ca. 110 km disgorges into the Ambracian Gulf. It too forms extensive gorges and receives waters from many major and minor tributaries, some of which flow underground. The Arachthos was navigable until recently from the Ambracian Gulf up until Arta. Its waters are nowadays used for irrigation and energy production (Nitsiakos & Arapoglou 2001: 91-100).

The *Louros* (ancient Charadros) rises about 20 km south of Ioannina, not far from the oracle of Dodoni. It is fed mainly by springs at Agios Georgios and Vouros, as well as from mountain streams above the village of Kopani. It is some 80km long, and the modern national road from Ioannina to Arta follows its course. In the gorges of the Louros, archaeologists have discovered extensive Palaeolithic material culture, exemplified by the famous finds from the cave of Asprochaliko and the site of Kokkinopilos (see Adam 1989 for an overview). One of the Louros' many tributaries, the Nera Kefalariou, was used to provide water to Roman Nikopolis and still serves the cities of Arta, Preveza and Leukas. The Louros remains navigable until the village of

Louros, but in antiquity it was navigable as far as Bouchetion (for the Louros river see Nitsiakos & Arapoglou 2001: 81-89).

The *Kalamas* (ancient Thyamis) rises on the south slopes of Mt Nemertsika, in the Parakalamos Plateau, where it receives the waters of the Gormos River, which comes from the Pogoni area to the north. The Kalamas then runs south and then east to discharge (after ca. 60 km) into the Ionian Sea, forming the Sagiada delta just north of Igoumenitsa. Its waters come from many tributaries as well as from the lake of Ioannina. In antiquity it was navigable until the site of Gitani, modern day Gkoumani (for the Kalamas river see Nitsiakos & Arapoglou 2001: 47-69).

The *Acheron* was probably the most famous river in Epirus in antiquity, since it is closely connected with the site identified as the Nekyomanteion (Dakaris 1975a; 1975b; 1976a; 1976b; 1977a; 1977b). It rises in the Souli Mountains and runs west to the Fanari valley and the Ionian Sea. It is the shortest of the main rivers, and was navigable at most until Kastri. Its valley was extensively surveyed by the Nikopolis Project (Tartaron 1996; Besonen 1997; Besonen et al. 2003). For the Acheron river see Nitsiakos & Arapoglou 2001: 70-79; see also pl. 5b).

Lakes form another attribute of the landscape of the Ioannina nomos. The largest is the Lake of Ioannina, or Pamvotis (pl. 6), in the centre of the region (Katsikis 1992), almost surrounded by the modern city of Ioannina and suburbs (Katsikis 1996; Pappas 2001). It is a karst feature, with no river flowing from it. The basin, a typical polje, is cradled by limestones which range in age from the Upper Triassic to the Upper Eocene. To the north-east stands the Mt. Mitsikeli ridge, separated from Pindus by the gorge of the upper Arachthos river. To the south-west lies the Dodoni plateau, which in places rises to over 1900 masl. The Tzoumerka mountains border the lake on the south-east. The basin would seem to owe its existence primarily to structural factors, although solution doubtless contributed to its present form. The lake's altitude is 469-470 masl, its surface about 21 km^2, and it is up to 8m deep.

Most authorities emphasize the role of 'katavothrai' (swallow holes) in the hydrological balance of the lake (Katsikis 1992 for a summary). Indeed its very existence was attributed to the blocking up by rock debris of its underground outlets (Fels 1957). The lake is fed principally by springs, notably those at the foot of the Mitsikeli ridge. Exceptionally heavy rains used to cause flooding of the basin floor until recently, presumably because underground drainage could not cope with the increased discharge from overland flow and from the swollen springs. A canal was constructed in 1944 to act as a storm drain. This canal now regulates the lake level and leads to the

Kalamas basin by means of a tunnel through the northern end of the Dodoni plateau.

The lake of Ioannina dates back to the Palaeolithic period, although since the earliest literary reference is made to it only in the 12th century AD., when Eustathius calls it Lake Pambotis (Scholia on Odyssey 3, 189), scholars have sometimes assumed that it did not exist in Classical antiquity (Hammond 1967: 185).

The lake of Ioannina preserves the best record of lake-level change in Greece and the Aegean (Higgs et al. 1967; Bottema 1974; Higgs 1978). Seven beach levels have been identified. Four of these reach the cave of Kastritsa. The highest, 3m above the present lake level, has four 14C dates associated with it, ranging from 21,800 ± 470 BP from below the beach to 19,000 ± 370 BP immediately above it. The lowest of the seven beaches is dated by adjacent Palaeolithic deposits to between 40,000 and 22,000 BP (Higgs 1978). According to Higgs, there was probably a series of rises in lake level, culminating in the highest level at about 21,000 BP. He interpreted the last rise as being caused by the increased runoff from the surrounding mountains as a result of increased precipitation. However, Bottema (1974) interpreted a pollen diagram from the lake sediments as indicating a cool, dry climate with no evidence of greater precipitation than today. According to Higgs (1978), the two conclusions are not necessarily contradictory, for there could have been an increase in precipitation, possibly seasonal, which was insufficient to produce change in the vegetation record. In addition, the lake's hydrology may be controlled by underground sinkholes. As Roberts (1982) pointed out, the karst outlets might have expanded and contracted in response to hydrological changes, but not instantaneously.

While the widespread formation of lakes is predictable in the mountainous and well-watered region of Ioannina, other lakes are very small. Examples include the lake of Zeravina (pl. 5d, nowadays almost non-existent) south of Delvinaki, and the lake of Zirou (altitude 48 masl, surface 0.30 km2) just north of Phillipiada. The so-called 'dragon lakes' (pl. 5c), small and close to each other at high altitudes lie in Mt. Timfi (2,200 masl) and Mt. Smolikas (2,150 masl). Local myths claim that a dragon existed in these two lakes and they fought each other by throwing stones. Artificial lakes, such as those of Arachthos (Pournari lake), Louros (Agios Georgios lake) and Aoos (the Aoos spring lake), have also been formed by the construction of river dams for hydroelectic stations.

Epirus' geographical and environmental attributes vary from those of surrounding areas. To the north, central Albania is characterised by wide plains which connect smoothly both with the Balkans to the east and the Adriatic coast to the west.

unlike the irregular relief of the Epirotic landscape. To the east and the north-east respectively, Thessaly and western Macedonia are characterised by large inland and/or coastal plateaux. To the south, Aetoloakarnania and the western Peloponnese are similar in geography and geology but not in environment. This difference may be explained with reference to the difference in latitude, and to the greater exposure to the sea (both regions have two long coasts to the west and south, and west and north respectively, whereas Epirus meets only the Ionian Sea in the west).

Climatic conditions in Epirus have been divided into three categories, following an ordinal landscape classification: maritime zone, semi-mountainous areas and highlands, each with its distinctive vegetation and human exploitation. The maritime zone is Mediterranean, with mild, rainy winters followed by hot, dry summers. The semi-mountainous zone is continental, with colder/rainier winters and warm summers, while the highlands are mountainous, with severe winters and cool summers.

Climate in Epirus is defined by its position between the Mediterranean Sea and the Pindus mountain chain as well as the mountainous character of the landscape with irregular relief. Strong influences are applied by the Atlantic and Siberian anticyclones as well as by the low-pressure systems in the West Mediterranean. In autumn they result in warm, moist southerly winds, but in winter, cold north winds dominate. The Pindus mountain chain acts as a barrier that stops and freezes the south winds in autumn and ameliorates the north winds in winter, resulting in greater rainfall, humidity and more cloud, mostly in the highlands. The average annual temperature in the low and maritime zone is 17.50 °C, and in the zone of middle altitude ca. 14.50 °C. In the mountainous zone, however, it falls to 10 °C and even lower in the high alpine area. The degree of frost gradually increases as we move higher. Rainfall increases from the south towards the north and from the west towards the east (for extensive accounts of the climate of North-western Greece, see Soulis 1994 and Settas 1980).

1.4.2. The geography of Epirus: Key Areas of the Ioannina Nomos

The Ioannina nomos, the focus of the present research, is the largest nomos in Epirus and one of the largest in Greece, characterised by high mountains, rivers and lakes. The table below presents some statistics:

Table 1.4.2a: The Ioannina Nomos, some landscape oriented statistics

Position: Longitude (20° 12′- 21° 26′ E), latitude (39° 12′ - 40° 21′)			
Surface: 4,990 Km^2		Modern Population: 158,193	
Mountains	Main rivers	Lakes	Key areas
Mt. Smolikas Mt. Grammos Mt. Tzoumerka (or: Athamanika) Mt. Souli Mt. Tomaros Mt. Mitsikeli Mt. Timfi Mt. Lakmos	Aoos Arachthos Louros Zagoritikos Sarantaporos Voidomates	Ioannina – Lapsista Zeravina Drakolimni I Drakolimni II	Ioannina Plateau Dodoni Plateau Kastritsa Hill

The Ioannina Plateau (pl 6):

The plateau of Ioannina rests on a broad zone of limestone. In the north-east, Mt. Mitsikeli (pl. 4e), arid nowadays due to repeated fires during the last century, and in the south-west the twin peaks of Mt. Tomaros (or Olytsika) form natural borders. The plateau, nowadays almost entirely deforested, is more than 500 masl. Mt. Tzoumerka is visible far in the southeast. The high peaks of Mt. Nemertsika, which lie across the Albanian frontier, dominate the view to the north. In the centre of the plateau and as noted, within this mountainous setting, lies the lake of Ioannina, with the modern and expanding city of Ioannina (pl. 6a). The streams of the northern part of the plateau run into the swamp of Lapsista, which is nowadays almost entirely drained (pl. 6b). The area covered by the Lapsista lake/swamp used to vary significantly according to season; it was usually small in summer, but in spring reached almost to the lake of Ioannina (Kolettas 2000). The lake itself is subject to slight seasonal variations. In the southern-most part of the plateau there are some eight places where pools of water collect in wet weather, and in other places the dark patches of soil show that they were once the beds of small pools.

The limestone detritus and the alluvial deposits of the plateau are fertile. They provide rich pasture for the migrating flocks of sheep. especially in spring, and support cereals in summer.

The southeast side of the plateau of Ioannina is bounded by low foothills. which gradually rise in height until they join the barren Mt. Xerovouni. which extends southwards almost as far as Arta. To the east of these foothills and Mt. Xerovouni, the Arachthos river has cut deep impassable gorges.

The Dodoni Plateau:

Between the southwest fringe of the plateau and Mt Tomaros, there is a small plateau on a higher level which contains the site of Dodoni (site # 43, see Gazetteer in part 3). It lies about 15 km south of Ioannina, and is separated from it by a limestone ridge. Subterranean channels also drain part of this plateau. Just north of Dodoni rises the Megalos Lakkos stream; this runs northwards from the plateau and is fed by the Smolitsas stream, a tributary of the Kalamas. The lower slopes of Tomaros are nowadays cultivated with vineyards and cherry, apple and pear orchards. The middle slopes of the mountain are almost bare, but lines of fir trees indicate that they must once have been well wooded. The high peaks are covered with snow almost throughout the year. Hammond (1967: 172) notes that 'the mountain was heavily wooded with firs on its upper slopes, but many trees were felled in 1912 and afterwards. For many years now the water has rushed unimpeded down the steep slopes and has carried screes and boulders into the plain'. Dodoni stands on the low watershed between the Louros and the Kalamas rivers (as noted, the source of the Louros is a few kilometres south of Dodoni, on the edge of the plateau).

The valley into which the plateau projects is in fact a little basin in the limestone formation, drained by two natural vents ('χωνεύτρες') both now covered to prevent animals from falling into them. In winter a small lake forms on the low ground below the ancient theatre, and this can also happen in summer if there is heavy rainfall.

Today most visitors to Dodoni come from Ioannina. The road crosses the ridge from the main plain to enter the little plain of Dodoni in its narrow valley. In antiquity, pilgrims must have used another route from the south, up the Louros valley. This is much more direct and involves shallower gradients than the modern road from the south to Ioannina, which is cut on the mountain flank further east. The routes which might have been taken from the Gulf of Arta and from the Acheron valley pass below the village of Kopani and then ascent to Dodoni. Nowadays this route is used only by climbers and mountaineers.

The Kastritsa Hill:

The hill of Kastritsa dominates the central and southern parts of the Ioannina plateau; it lies midway between the entrance to the plain from the east at Driskos, the southern part of Mt. Mitsikeli and the area of Kopani village to the south. That the important site of Kastritsa is here is of no surprise, since the natural pull of trade in the plateau of Ioannina is towards the south.

In conclusion, the Ioannina nomos is characterised by a landscape more reminiscent of Central Europe landscapes than Greece. High mountains, rivers, karstic lakes and small plateaux unite in a landscape both close and far away from Southern Greece, the Balkans to the north, the plains of Macedonia and Thessaly to the east, and the Ionian Sea to the west. Within this context, human activity flourished and human cultures were developed from the Palaeolithic onwards.

1.5 Epirus and the Ioannina Nomos: New Administrative Realities that Affect the Practice and Recording of Archaeological Research

Over the last three years, there have been changes to the structure of the prefectural administration of the Greek State as well as to the administration system of Greek archaeology. A new system of demoi (municipalities) and koinotites (communities) replaced the old one, which was based on provinces and provincial centres. The new system is known as the Kapodistrias Plan, and has altered the internal borders of Greek administrative units. In terms of changes in the structure of Greek archaeology, a new Law was introduced by the Hellenic Ministry of Culture, reassessing the role, the quantity and the extent of the authority of all institutions involved in archaeological research in Greece (Ephorates, Universities, Foreign Schools, etc.).

Archaeology and topographical studies all over Greek territory has been affected. These changes are expected to be permanent. Since they are relatively recent, the archaeological literature has not yet fully incorporated them. With regard to the Ioannina nomos as a whole, this thesis is the first study incorporating these changes in its records, analysis, and discussion.

1.5.1 The Kapodistrias Plan: Demoi (Municipalities) and Koinotites (Communities)

For the purpose of administrative decentralization and with a view to making the local authorities more efficient, in November 1997 the Greek Parliament adopted this comprehensive programme of local government reform in the face of considerable opposition. Before the Kapodistrias plan, the Ioannina nomos was divided in 4 sub-prefectures (επαρχίες) (pl. 7a). This system replaced the pre-1913 ottoman administrative units (pl. 7b). Under the plan, the number of local authorities was reduced from about 6,000 to the present 1,000. This was the basis for the local elections held in October 2002, when the Plan, after the 1997-2001 five-year preparatory and support period, officially took effect. The distinction between a demos and a koinotita is not clear, but it reflects historical, topographical, demographical and economic characteristics and criteria. As mentioned in the Preface of this thesis, I have chosen to use the terms 'demos' and 'koinotita', instead of 'municipality' and 'community' respectively, since the Greek words express concepts significantly different from their English equivalents. More information on the content of these words as well as on all relevant frameworks, concepts, plans, ideas and aims of the Kapodistrias plan can be found in http://www.ypes.gr/kapodistrias/english/kapo/fr_prog.htm (last visited 20/09/2004).

According to the Kapodistrias plan, the Ioannina nomos consists of 28 demoi and 13 koinotites. Every demos and koinotita has a capital, which is usually the largest town or village, and a number of 'municipal units' (δημοτικά / κοινοτικά διαμερίσματα) comprising the rest of the towns and villages of the demos or the koinotita. The overall capital of the nomos is Ioannina, capital of the demos Ioanniton. The name, boundaries, and the position of the capital of every demos and koinotita in the Ioannina nomos are presented in the table below (table 1.5.1a). For the archaeological record of every demos / koinotita in Late Prehistory, see chapter 3.2.3.2B.

Table 1.5.1a: Demoi (municipalities) and koinotites (communities) of the Ioannina nomos

1.	Ano Kalama	**15.**	Katsanochorion	**29.**	Aetomilitsis (K)
2.	Ano Pogoniou	**16.**	Kentrikou Zagoriou	**30.**	Vathypedou (K)
3.	Agiou Demetriou	**17.**	Konitsas	**31.**	Vovousis (K)
4.	Anatolis	**18.**	Mastorochorion	**32.**	Distratou (K)
5.	Anatolikou Zagoriou	**19.**	Metsovou	**33.**	Kalariton (K)
6.	Delvinakiou	**20.**	Molosson	**34.**	Lavdanis (K)
7.	Dervizianon	**21.**	Mpizaniou	**35.**	Matsoukiou (K)
8.	Dodonis	**22.**	Pamvotidos	**36.**	Mileas (K)
9.	Egnatias	**23.**	Passaronos	**37.**	Nisou Ioanninon (K)
10.	Ekalis	**24.**	Peramatos	**38.**	Papingkou (K)
11.	Evrimenon	**25.**	Pramanton	**39.**	Pogonianis (K)
12.	Zitsas	**26.**	Sellon	**40.**	Syrakou (K)
13.	Ioanniton	**27.**	Tzoumerkon	**41.**	Fourkas (K)
14.	Kalpakiou	**28.**	Tymfis		

1.5.2 The New Archaeological Law

The new Law was issued by the Hellenic Ministry of Culture in summer 2003 (Greek Government Gazette, issue number 146, 13/06/2003), introducing significant changes in the structure of Greek Archaeology. There are plans to increase the number of Ephorates and the number of archaeologists working for the Service. The number of Ephorates of Prehistoric and Classical Antiquities is increased to 39 (from 25), and the number of Ephorates of Byzantine Antiquities to 28 (from 13). The role of the Ephorates becomes even more central in terms of control over archaeological activity in Greece. New institutions are established, most important of which the six Archaeological Institutes: Archaeological Institute of Macedonian and Thracian Studies, Archaeological Institute of Thessalian Studies, Archaeological Institute of Peloponnesian Studies, Archaeological Institute of Epirote Studies, Archaeological Institute of Cretan Studies, Archaeological Institute of Aegean Studies. Foreign Schools are restricted to a maximum of three school-only projects (survey and excavation) a year, and three joint projects in collaboration with the Ephorate responsible. Departments of archaeology in Greek universities have to submit a programme of research every year to the Hellenic Ministry of Culture, Greek Archaeological Council; there is no limit on the number of projects they can submit, but it is implied that the permission of the Ephorate responsible is necessary. Expeditions by non-Greek universities need to be under the auspices of a School and/or an Ephorate. For non-Ephorate institutions, fieldwork seasons are restricted to a period of no more than six weeks. Special departments within the Hellenic Ministry of Culture are responsible for the application of information and computing technology in archaeological practice, museum studies, and relevant educational and training programmes.

The 12th Ephorate of Prehistoric and Classical Antiquities and the 8th Ephorate of Byzantine Antiquities were previously responsible for all archaeology-related activity in the Ioannina nomos among other nomoi. According to the new Law, the Ioannina nomos will be the only focus of the 12th Ephorate of Prehistoric and Classical Antiquities, and will share the services of the 8th Ephorate of Byzantine Antiquities with the Thesprotia nomos. The 12th Ephorate of Prehistoric and Classical Antiquities and the 8th Ephorate of Byzantine Antiquities are also partly responsible for organising the work and activities of the newly established Archaeological Institute of Epirote Studies. In order for this new framework to be well-organised and effectively supported, more archaeologists are going to be employed, resources and equipment are being updated, current premises are being renovated (e.g. the Archaeological Museum of Ioannina),

and new buildings constructed. It is hoped that parts of this project, especially the digital aspects, will be a value and help in the new archaeological organisation of the Ioannina nomos.

1.6 Epirus and the Ioannina Nomos: Past Research on Late Prehistory

It is not surprising that archaeological research on the Late Prehistory of northwestern Greece was for long peripheral to wider archaeological enquiry in the area, and it was not until as late as 1967 and 1972, with the research of Hammond (1967: 289-389) and Wardle (1972) respectively, when Late Prehistory became a principal focus. Epirus has its own unique place in Greek antiquity, mainly demonstrated by the ancient oracle of Dodoni, the oracle of the Dead (Nekyomateion), the figures of Olympias (Alexander the Great's mother) and Pyrros (most famous of the Epirote kings in the Hellenistic period), and the Roman city of Nikopolis. This role is also confirmed by the many inscriptions and references in the ancient literary record (see Cabanes 1974 for an overview). Therefore, studies, expeditions and excavations concentrated on the location and excavation of the sites mentioned above. In terms of Late Prehistory, Epirus's role derives from its place in Greek mythology and the epic tradition, which has been extensively discussed by Lepore (1962: 1-107), Hammond (1967: 365-395), and Dakaris (1964b: 3-21 for Molossia; Dakaris 1971a: 25-32 for Cassopaia; Dakaris 1972a: 50-76 for Thesprotia).

This section of the thesis has three subsections. The first is dedicated to accounts of the travellers who visited Epirus in the past and left important information of archaeological character. In the second, a summary / chronicle of archaeological research in Epirus is presented, focusing upon contributions related to Late Prehistory and the Ioannina nomos. The final subsection consists of an account of the oracle of Dodoni in Prehistory, in terms of archaeology, ancient literature, and mythology.

1.6.1 The Accounts of Travellers

Pausanias, Strabo and Livy did not include extensive accounts on Epirus in their work, and no similar account has come from antiquity. However, modern European travellers have produced enlightening descriptive accounts of northwestern Greece.

Archaeological research in Greece has its roots in the European antiquarian movement of the 17th century and/or the Dilettanti of the 18th century. Epirus is no

exception, although interest in the antiquities of northwestern Greece was not as great as that in the monuments and objects of art then remaining to be discovered in the ancient Greek centres of southern Greece and Asia Minor. The accounts of European travellers are full of romanticism for the area's ancient mythic and legendary sites, like the Dodoni sanctuary-oracle, the Nekyomanteion (oracle of the Dead) and the Acheron lake-valley (the mythical entrance to the kingdom of Hades). However, we also see more practical motives at work, including commercial interests, geo-topographical researches, as well as interest in ancient inscriptions, the spotting of ancient remains and the location of sites known from literary sources.

The leading figures are presented below:

Benjamin of Toudela arrived in northwestern Greece in the 1160s and visited the island of Corfu and Arta. His main interest was the Jewish communities in Greece, since he was of Jewish origin himself. He provides information on landscape features and the state of local commerce at that time, as well as on contemporary perceptions of the local past and ethnic identities (for the works and travels of Benjamin of Toudela, see Meir 1984).

Cyriacus of Ancona (visits in 1434-1448) offers the earliest archaeologically-oriented account of the area today within the boundaries of northwestern Greece (see also Ziebarth 1926:110-119). His main interest was ancient remains, coins, manuscripts and inscriptions of the area of the Ambracian Gulf. He visited the rest of Greece as well and tried to record all historical sites and their features (Bodnar 1960). For this reason he has been called 'the medieval Pausanias of Greece' (Ergolavos 1996:19).

F.C.H.L. Pouqueville was sent to northwestern Greece as an ambassador of France during the period of Ali Pasha (19th century), and stayed for ten years. He published his impressions and memories in his book entitled 'Voyages de la Grèce' (Pouqueville 1826). He attempted to paint a picture of Greece in the 19th century with special reference to the northwest, and provides us with many topographic details as well as engravings of the landscape.

Lord Byron must be mentioned at this point. In the first decade of the 19th century, he traversed Epirus from south to north by travelling from Preveza to Albanian Tepeleni, where Ali Pasha, ruler of the area, and his court were then in residence. He did not produced any accounts of strict archaeological and/or antiquarian interest, but the Canto the Second of his *Childe Harold's Pilgrimage*, published in 1812, first introduced northwestern Greece to the literate world of Great Britain. Lord Byron penetrated far into Albania, even visited the court of Ali Pasha, in a period when the

traditional Grand Tour, which used to cap a young gentleman's education, was out of the question, since Britain had been at war with France since 1793, with only a short period of truce (the Peace of Amiens in 1802), and it had been impossible to travel on the Continent for almost twenty years. The publication of this very expensive first edition sold out almost immediately, Lord Byron became famous, and interest in the area was increased. Many adventurous and literate travellers followed the fictitious Childe Harold's example. *Dr (later Sir) Henry Holland*, *Rev. Thomas Stuart Hughes*, and *C.R. Cockerell* followed Lord Byron's trails, and produced interesting and informative accounts of historical, ethnographical, topographical and archaeological character (respectively Holland 1815; Hughes 1820; Cockerell 1903). It was because of Lord Byron's writing that interest in the area was advanced.

Two more Englishmen, *William Leake* (Leake 1835[7]) and *Christopher Wordsworth* (Wordsworth 1839), soon afterwards provided works full of observations, accurate topographical references, a series of unknown ancient remains and sites together with many pictures both interesting and beautiful. Leake travelled extensively in Epirus and the Peloponnese, and identified the locations and names of many previously undiscovered Greek sites mentioned by Pausanias, Strabo, Livy, and others (Leake 1830; Stoneman 1987: 155–160). Wordsworth's work *Greece: Pictorial, Descriptive, and Historical* (Wordsworth 1839; Wordsworth 1853 revised edition) provides clear and precise topographical references, as well as information on the conditions of villages and their inhabitants at the time.

We need to point out that while travellers' contributions tend in the same direction, they sometimes conflict in detail and points of interpretation. To use Dodoni as an example again, Cyriacus of Ancona unsuccessfully placed ancient Dodoni in the vicinity of Nikopolis, while Leake incorrectly suggested Kastritsa (Leake 1935: vol. IV, 168-201) on the southern shore of the lake Pamvotis (the lake of Ioannina). Wordsworth favoured a site 17 km south of Ioannina, in the area of Dramisos (Wordsworth 1953: 324-319; Lincoln 1881), and he was proved correct by the later excavations of Carapanos (Carapanos 1878). This site had already been spotted by Leake as a place of major archaeological importance (Leake 1935: vol. I, 264-268). For more on Dodoni in Prehistory, see chapter 1.6.3.

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[7] Part of Leake 1835 has been published online: http://esf.niwi.knaw.nl/esf1996/leake96/html/geenfram.htm, last visited 20/09/2004.

1.6.2 Synopsis of Archaeological Research

Pure archaeological research in northwestern Greece started at the end of the 19th century A.D., at a period when the area was still under Ottoman occupation and Schliemann was conducting excavations that led to the discovery of the ancient cities of Troy and Mycenae. The aim was the discovery of the ancient oracle of Dodoni. Excavations were led by a Greek politician, who managed to get all relevant permissions from the authorities of the Ottoman Empire.

Constantinos Carapanos was the first excavator in northwestern Greece. Work started in 1875 in the area of Dramisos, or Tsarkovitsa, already noted by both Leake and Wordsworth. Wordsworth had already twice suggested the area as a strong candidate for the location of ancient Dodoni, but Carapanos does not refer to Wordsworth 1839 or the revised edition of Wordsworth 1853. Apart from architectural remains, Carapanos discovered bronze and lead tables with oracular inscriptions, proving that the site of Dramisos was indeed the ancient sanctuary and oracle of Dodoni. Carapanos published the oracular tablets and the rest of his discoveries in 1878, in his book entitled *Dodone et ses ruins* (Carapanos 1878). Regarding Late Prehistory, however, he mentions no material, evidence or strata in this book. Although most of Carapanos' conclusions and interpretations of the site are no longer valid, it is a fact that he pioneered archaeological research west of Pindos. Besides Carapanos' great discoveries, work at Dodoni did not continue, mainly because it was not easy for the necessary permissions to be granted from the Ottoman authorities at the time.

Dimitrios Evangelidis continued work at Dodoni in the periods 1929-1932 and 1935 (Evangelidis 1930; Evangelidis 1931; Evangelidis 1935). Epirus had been part of the Greek State since 1913, and therefore the antiquities of the area were treated in a very different way, offering easier access to studies, research and scholar investigations. A clear example of this situation is the 1932 Cambridge essay on Epirus, written by *G.N. Cross* (second edition in 1971). Cross' essay deals with Epirote antiquity, was honoured by a Cambridge award and is, as its writer states, the first scientific account of the Epirote past (Cross 1971). Evangelidis was the first full-time archaeologist operating in the area. His works were sponsored by the newly founded Archaeological Society of Athens, which still funds excavations at Dodoni today. During his excavations, Evangelidis discovered the first late prehistoric material in northwestern Greece, including mainly pottery and stone tools (Evangelidis 1935). The Second World War stopped the works at Dodoni, which were resumed in 1952 by Evangelidis and Sotirios Dakaris.

Sotirios Dakaris was Evangelidis' companion, colleague and successor. Dakaris continued Evangelidis' works at Dodoni and dedicated his life to the archaeology of Epirus. His many discoveries, publications and ideas have granted him a long list of references in every study of Epirote antiquity. Dakaris has been an independent excavator, Ephor of Antiquities and Professor of Archaeology in the University of Ioannina. He discovered and/or conducted excavations in the most important Bronze Age sites known today, including Dodoni (site # 6), Kastritsa (site # 29), Kiperi, Xylokasro (Ephyra), and the Nekyomanteion, and wrote extensively on the social and mythological aspects of the Bronze Age peoples of Epirus. Among his numerous writings we must underline his PhD thesis (*Οἱ γενεαλογικοὶ μύθοι τῶν Μολοσσῶν*, Dakaris 1964b), an overall synthesis of Epirote mythology, and his books *Cassopaia and the Elean Colonies* (Dakaris 1971a) and *Thesprotia* (Dakaris 1972a), two volumes containing detailed information on the environment, economy, social organisation in the above areas from the Palaeolithic to Roman times based upon archaeological finds and literary evidence. A catalogue of Dakaris' works (97 publications in total) can be found in Tzouvara-Souli et al. (1994: 17-20). It is worth mentioning that, despite Dakaris' death in 1996, his work is not yet over. Following the trend of the volumes on Cassopaia (Dakaris 1971a) and Thesprotia (Dakaris 1972a), Dakaris had started preparing a volume on Molossia (the geographical area including the Ioannina nomos), but relevant work remained at a preliminary stage. As mentioned in Tzouvara-Souli et al. (1994: 20), a team from the University of Ioannina is preparing Molossia for publication, a collective work that will include a still unpublished contribution from Dakaris which will be his 98th publication. It is hoped that parts of the present work will contribute to the Molossia volume.

E. Lepore, an Italian scholar, produced in 1962 a study of prehistoric and ancient Epirus. His book *Richerche sull' antico Epiro* (Lepore 1962) includes a large part dealing with the relations between Epirus and the Mycenaean world, in an effort to determine social organisation, cultural identities and patterns of interaction based upon archaeological, linguistic and literary evidence.

N.G.L. Hammond, a British scholar, military man and later professor, a friend of both Evangelidis and Dakaris, offered the first great synthesis of Epirote antiquity in 1967, entitled *Epirus: The Geography, the Ancient Remains, the History and the Topography of Epirus and Adjacent Areas* (Hammond 1967). Hammond walked all mountains, valleys and paths of what is today Epirus, W. Macedonia and Albania. He discovered and located many sites of archaeological importance, and produced the first

great synthesis of antiquities of the area with useful ethnographical and ethnoarchaeological elements (Hammond 1931/2; Hammond 1967). Hammond's methods, determination and devotion have surprised readers ever since his work was published: Evangelidis (1935: 27) remarks in a footnote that, while he was excavating at Dodoni, he saw Hammond reaching the site on foot from Ioannina early in the morning and leaving the site, on foot again, late in the afternoon to return to Ioannina (a total distance of about 50 kms!). Hammond devotes Part Two of his detailed account (1967: 289-389) to the prehistory of Epirus. This chapter, both archaeological and theoretical, comprises the first overall account of the Epirote Bronze Age.

In the 1970s, apart from the work of Dakaris, Epirus in Late Prehistory has benefited from two strictly Bronze Age oriented studies: the first was conducted by *K. Wardle* as his PhD thesis (Wardle 1972) and the second is an article by *Th. Papadopoulos* (Papadopoulos 1976). Wardle's work, entitled *The Greek Bronze Age West of Pindus*, is the first archaeological account of the Bronze Age of this area. Papadopoulos offers a catalogue of sites and finds organised by artefact type and chronology, accompanied by brief commentary. Both scholars continued to publish on the Late Prehistory of northwestern Greece (Wardle 1977; Wardle 1993; Wardle 1997; Papadopoulos 1987b; Papadopoulos 1987c; Papadopoulos 1990). Papadopoulos continued Dakaris' excavations in the area of Xylokastro (Ephyra) and published the only tholos tomb discovered in Epirus, that of Kiperi near Parga (Papadopoulos 1981b). It was in the 1970s that more scholars started to devoted time and energy to the study of Epirus in Late Prehistory (Lagaris 1976/1977, an unpublished MA thesis, is an example).

In the 1980s, the bibliography on northwestern Greece in Late Prehistory was enriched by the publications of more scholars. Ilias Andreou and Ioanna Andreou, Ephors of Antiquities at the time, started publishing preliminary reports of their systematic excavations at Meropi Pogoniou (site # 13) as well as reports of rescue excavations and chance finds from all over Epirus. In 1986, Kostas Soueref produced a PhD thesis which accumulated all of the Mycenaean evidence in Epirus then known (Soueref 1986), and he has continued to publish on different aspects of the Bronze Age of northwestern Greece (Soueref 1989a; 1989b; 1991; 1993a; 1993b; 1994; 1996; 1999; 2002). His thesis was revised and published recently (Soueref 2001). It was in this decade that Epirote Late Prehistory found a regular international scientific and research forum: P. Cabanes initiated a series of congresses on Epirus and Illyria (*L' Illyrie meridionale et l' Épire dans l' Antiquité*), which were regularly held in France

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(Clermont-Ferrand and Chantilly). The proceedings of the first three congresses have been published (Cabanes 1987; 1993; 1999).

In the later 1980s and the 1990s, the archaeological study of Epirote prehistory has been considerably advanced by Drs I. Vokotopoulou, A. Douzougli and K. Zachos. who have organized, supervised and directed archaeological work especially in the Ioannina nomos as Ephors of Antiquities. Important new sites were discovered, such as Vitsa (Vokotopoulou 1986, Early Iron Age site), Krya (site # 31), Doliana (Douzougli & Zachos 2002, Neolithic site) and Liatovouni (Douzougli 1996; chapter 2.2.5.1 below). Further work was conducted as a result of the construction of Egnatia Odos, while the first major modern archaeological project took place, the Nikopolis project, which led to new evidence on the Late Prehistory of southern Epirus. This evidence was brought together by Tartaron in exemplary fashion in his PhD thesis (Tartaron 1996) and will be published within 2004 (Tartaron in press)[8].

The present thesis, focusing on the Ioannina nomos, aims to continue and built upon previous research. My results, together with all information from other sources and given the necessary permissions and copyrights, will take their place in a database for the Late Prehistory of northwestern Greece, an idea / project initiated in 2003 (Papaioannou 2003).

Certain limitations must be mentioned in terms of archaeological research in Epirus. The first one is of political and historical character. What is now called the 'modern Greek state' was established in 1832 and Epirus was not a part of it until 1913, when it was extricated from the declining Ottoman Empire. So we are dealing with a 91 year-old Greek territory, which had a lot of problems to face and solve which seemed more pressing than proper archaeological and historical research, especially in the early years.

In terms of archaeological research, the main limitation relates to full and final publications of excavated contexts and/or research programmes. The only final publications related to ancient Epirus are Bailey (1997) on the Palaeolithic settlement and activity at Klithi, Wiseman & Zachos (2003) on the results of the Nikopolis Project, and Tartaron (in press) on the Bronze Age in the Acheron Valley. Major projects related to Late Prehistory, such as the Ephyra excavations by Papadopoulos (works started in 1970s) and the Meropi excavations by Andreou (works started in 1980s) are only

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[8] I am more than grateful to Th. Tartaron, who was kind enough to allow me to read the final version of his forthcoming publication, and has always been full of enthusiasm to offer his advice and discuss ideas and thoughts.

known from preliminary excavation reports and/or short congress papers (see Papadopoulos, Th. all references, and Andreou, Ilias, all references). In my view, the responsibility for this problem lies mainly with the infrastructure, permission processes, funding prospects and time constraints within Greek archaeology. It is expected that the New Archaeological Law will initiate procedures that will result in final publications of old projects within certain time spans.

A second limitation, emphasized by Tartaron, relates to 'terse descriptions of sites and results of investigations that appear in the yearly archaeological reports or in published conference papers' that 'simply do not permit effective review' (Tartaron 1996: 70). Tartaron uses Andreou (1994) as an example: Andreou (1994) reports the discovery of 40 new sites that he dates to Prehistoric times. Andreou's account is indeed very brief, general and vague, making Tartaron's criticism fair and justified (1996: 70-71). It is true that archaeology needs full and detailed publications, not just general incomplete treatments. On the other hand, reporting something partially is sometimes better than not reporting it at all, especially if one considers the possibility of potential loss of information. To use the same example, Andreou (1994: 238-239, 253) reported in Aristi (site # 18), at the 'upper' part of the village (Πάνω Μαχαλάς), remains of a cist grave framed by limestone slabs, spotted during road construction works. Pottery sherds found were dated by Andreou to the 11^{th}-10^{th} centuries B.C. No dimensions, drawings, photographs and/or bones are mentioned. I visited Aristi in summer 2003, and saw no indication of this find. A road had buried the discovery, a fact that makes Andreou's brief and incomplete report the only indication of archaeological activity at this location.

Last but not least, certain practical constraints make the development of archaeological research problematic. Excluding the Ephor of Antiquities, it is true that only one archaeologist has operated full-time in the Ioannina nomos for the last few years. This person is responsible for all archaeological activity in the nomos, focusing upon rescue works. When the Ephorate's finances permit, his/her work is assisted by archaeologists working on contract on a time rather than a project basis. The result is that many short and/or longer –scale projects remain unfinished, due to lack of personnel and resources. It is expected that the New Archaeological Law will initiate procedures that will result in full-time employment and project-based contracts.

1.6.3 The case of Dodoni in Late Prehistory

The place of Epirus in ancient Greek literature has been fully discussed by many scholars. Chassiotis (1867: 1-68), Hammond (1967: 365–395, 399–400), Lepore (1962: 1–107, 113–126), Dakaris (1964b: 3–21; Dakaris 1971a: 25–32; Dakaris 1972a: 50–76), and Besonen et al. (2003: 199-205) comprise detailed overall accounts. The case of Dodoni in the Bronze Age in terms of both literary evidence and archaeological material has been recently analysed in detail by Tartaron (1996: 48-55) and Dieterle (1999). My comments will thus be restricted to a few summary points as well as some additions.

Late prehistoric Dodoni in ancient Greek literature

Ancient Greek sources suggest the existence of a well-known and very important pre-Hellenic sanctuary and oracle of Zeus at Dodoni. The table below summarises the most important testimonia relating to Late Prehistory:

Table 1.6.3a: Late prehistoric Dodoni references in ancient Greek literature

Reference	**Brief review**
Homer, Iliad, II 748-750 (Murray 1946a, 106-107)	The 'Catalogue of ships': Homer mentions that the inhabitants of the Dodonean area (Enienes and Peraebi) offer 22 ships for the needs of the Troyan War.
Homer, Iliad, XVI 223-235 (Murray 1925, 180-181)	Achilles prays to Zeus referring to the God as "Zeus, Dodonaean, Pelasgian, thou that dwellest afar, ruling over wintry Dodona...)
Homer, Odyssey, XIV 327-330 (Murray 1946b, v. II, 58-61)	" ...But Odysseus, he said, had gone to Dodona to hear the will of Zeus from the high-crested oak of the God, even how he might return to the rich land of Ithaka after so long an absence..."
Homer, Odyssey, XIX 296-299	Same as the above (Homer, Odyssey, XIV 327-330)
Hesiod, Fr. 14 (Evelyn-White 1929: 278-279)	"He went to Dodona and the oak grove, the dwelling place of Pelasgi". It is about a literary fragment attributed to Hesiod. Unfortunately we do not know whom it refers to.
Herodote II, 52-56 (Godley 1946: 338-341)	Herodote presents firstly the myth and then his point of view of how the Dodonean oracular shrine was established. He states that: "This place of divination is held to be the most ancient in Hellas, and at that time it was the only one".
Aeschylus, Prometheus Bound, 655-660 & 829-835 (Weir Smith 1963, 274-275 & 290-191)	Prometheus mentions Dodona as the shrine of Thesprotian Zeus, pointing out its outstanding oracular power.

References to Dodoni are also found in many sources, including Hesiod. Herodotus, Aeschylus, Sophocles, Demon, Apollonius, and Pausanias (for a detailed account, see Dieterle 1999: ch. II.1). The Thesaurus Linguae Grecae online database on Greek literature (http://www.tlg.uci.edu/, last visited 20/09/2004) produced 131 matches in the work of 33 ancient Greek writers of all genres, a quite significant statistic that shows Dodoni's importance in the antiquity. The search was on the stem 'δωδων'.

It is not an exaggeration to conclude that Dodoni was highly regarded in the pre-Classical and Classical Greek world as a prominent panhellenic and probably pan-Balkan sanctuary and oracle, a fact that justifies all attempts to spot and exhibit its secrets through archaeological methods, analysis and interpretation.

The quest for the location of Dodoni

Dodoni's role in ancient Greek literature, mythology and tradition stimulated scholars to search for its location. As in the cases of the successful quests for Troy and Mycenae, and the not-yet-successful ones for Homeric Ithaka and Alexander the Great's tomb, efforts, guesses and suggestions were based upon combinations of literary and topographical data and accounts.

The longing to locate Dodoni is explicitly expressed by Lord Byron in his *Childe Harold's Pilgrimage*, Canto 2, 53:

Oh! where, Dodona! is thine aged grove,
Prophetic fount, and oracle divine?
What valley echo'd the response of Jove?
What trace remaineth of the thunderer's shrine?
All, all forgotten--and shall man repine
That his frail bonds to fleeting life are broke?
Cease, fool! the fate of gods may well be thine:
Wouldst thou survive the marble or the oak?
When nations, tongues, and worlds must sink beneath the stroke!

Cyriacus of Ancona unsuccessfully placed ancient Dodoni in the vicinity of Nikopolis. Meletios the Geographer proposed the area of the Drin river valley, which lies in the ancient land of Chaonia in modern southern Albania (1807: vol. B, 269, 272). Paliouritis (1807: 31) and Stageiritis (1819) agreed with him. Perraibos (1857) placed Dodoni in the area of Souli, southern Epirus, in the ancient remains of Foiniki. Pouqueville (1826), after consideration of all the evidence available to him, incorrectly suggested the location of Gardiki, just north of the modern city of Ioannina, which has

recently been identified as ancient Passarona (site # 36). Mt. Mitsikeli was identified as the ancient Mt. Tomaros. For Pouqueville, Passarona was in the area of Dramisos, which proved to be the location of ancient Dodoni. Leake incorrectly proposed the hill of Kastritsa (Leake 1935: vol. IV, 168-201) on the southern shore of lake Pamvotis (the lake of Ioannina), as the location of the oracle of Zeus at Dodoni, Mt. Mitsikeli as ancient Mt. Tomaros, and the modern city of Ioannina as the location of the ancient city of Dodoni. Leake described Dramisos as a place of major archaeological importance (Leake 1935: vol. I, 264-268). Arneth agreed with Leake in favouring Kastritsa (Arneth 1840: 19).

'One of the most interesting and difficult questions in Greek geography is, «Where was Dodona?». When you go to Greece, mind and try to find it out'. This was the encouragement that eventually led to the correct location of Dodoni. It was given by Sir William Gell to Christopher Wordsworth in 1831, when the two men met in Naples where Wordsworth was preparing himself for his 1832-1833 journey to Greece (Lincoln 1881: 228). Wordsworth fulfilled Gell's words of advice and encouragement, and he unravelled the mystery. As noted above (chapter 1.6.1), he favoured a site 17 km south of Ioannina in the area of Dramisos (Wordsworth 1853: 324-319; Lincoln 1881; see also pl. 8a), and was proved correct by the later excavations of Carapanos (Carapanos 1878).

Wordsworth published his ideas on the location of Dodoni in 1839 (Wordsworth 1839; Wordsworth 1853 revised edition), but surprisingly enough the quest was not over. Wordsworth's work soon went out of print, despite its reprinting in English and translation into French (Wordsworth 1841). For reasons that are not clear, Wordsworth' work was not taken into account, and the man who first located ancient Dodoni correctly was unexpectedly ignored in the bibliography of later years. Even Carapanos, excavator of Dodoni, does not mention him in *Dodone et ses ruins* (Carapanos 1878).

Hahn, an Austrian consul in Ioannina in the mid-19th century, agreed with Leake in placing Dodoni on the Ioannina plateau, after having discussed and rejected Dramisus, based upon Leake's arguments (Hahn 1854: 26). There is no mention of Wordsworth's work in Hahn's book. Pallis (1858: 13) proposes Kastritsa as the location of ancient Dodoni, offering Leake's arguments without even referring to Leake's work. Aravantinos (1856/1857) agreed with Pallis. Again, there is no mention of Wordsworth`s work in Pallis' and Aravantinos' studies.

Of special interest is Chassiotis' study *'Περὶ Δωδώνης πραγματεία'*, published in 1867. This study is very rare; it does not exist in the British Library or the Greek National Library. I have not seen it referred to in any publications related directly and/or

indirectly to Dodoni. It came as a surprise to me when a friend showed it to me in Ioannina in summer 2003.

Chassiotis, an Epirote scholar living in Constantinople, was a very active member of the Ηπειρωτικὸς Φιλεκπαιδευτικὸς Σύλλογος Κωνσταντινουπόλεως (Epirote Society of Letters in Constantinople). Carapanos was a friend and a sponsor of this Society; he offered a significant amount of money to it for the writing and production of school books (Xanthopoulos et al. 1873/1874: 339-340). Carapanos was also Chassiotis' close friend. Chassiotis' study *'Περὶ Δωδώνης πραγματεία'* is definitely the outcome of extensive work on the subject. It consists of 136 pages and two maps dedicated to showing Dodoni's actual location. Chassiotis meticulously considers all ancient Greek and Latin sources, as well as all accounts of travellers and all publications known to him. The only publication that Chassiotis missed is Wordsworth's work, which I believe that Chassiotis did not know of when he was preparing his book (Chassiotis 1867: ζ΄-η΄). Chassiotis study has two parts: a historical – philological section (Chassiotis 1867: 1-68) and one on topography (Chassiotis 1867: 69-131). His conclusion is definite: all other possibilities are firmly rejected, including Dramisos. Chassiotis absolutely agrees with Leake's suggestions, and praises Leake's work. He also produced a map of the Ioannina plateau indicating the position of Dodoni (pl. 8b).

We know that Chassiotis visited Paris in 1874 after the publication of *'Περὶ Δωδώνης πραγματεία'*. He was appointed by the Epirote Society of Letters (Xanthopoulos et al. 1873/1874: 267-308) to study the French educational system and consider possible applications for Greek schools (Chassiotis 1881; Papaioannou 1997). This was the period when Schliemann was discovering ancient Troy on the Hissarlik Hill. In 1875, Carapanos began work at Dramisos, and soon discovered ancient Dodoni. In '*Dodone et ses ruins*' (Carapanos 1878), the discovery of ancient Dodoni is presented without a single mention of either Wordsworth or Chassiotis.

It seems to me that Chassiotis first came in touch with Wordsworth's work in Paris in 1874, probably via the French translation of the book (Wordsworth 1841). I also speculate that he must have notified Carapanos immediately, who then initiated excavations in Dodoni and confirmed Wordsworth's suggestions. Then Chassiotis had to withdraw his study *'Περὶ Δωδώνης πραγματεία'* (1867) from circulation (which is probably why it is so hard to find), since his firm and absolute conclusions had been proved wrong, and this would have created major problems for his credibility, and

probably his funding for future works. Therefore, it is not surprising that Carapanos refers neither to Chassiotis nor Wordsworth. He published nothing more on Dodoni.

Wordsworth kindly reminded the scholarly community of his discovery in a letter to the editor of the Journal of Hellenic Studies in 1881 (Lincoln 1881), entitled 'Where was Dodona?' and signed by Wordsworth as C. Lincoln, since Christopher Wordsworth was Bishop of Lincoln from 1869 until his death in 1885. As Wordsworth stated in his letter, he was informed about the discovery of Dodoni by reading Roberts (1880) and Carapanos (1878).

It should be noted at this point that communication systems at the end of the 19th century were not advanced enough to secure wide circulation of news and events. A characteristic example is Konstantinidis 1888, who was obviously not informed of the 10-year old Carapanos' publication (1878): he places Dodoni in Kastritsa, according to Leake (1835).

I believe that Chassiotis' work still has a lot to offer, and deserves further and more detailed consideration. It contains much information on Dodoni not widely known. It would be useful to locate as many copies of his study as possible using the catalogue of subscribers at the end of his book (Chassiotis 1867: 133-136). But this is the theme of another study.

The Late Prehistoric Archaeological record of Dodoni

The quest for Dodoni was completed in 1839 by Wordsworth and in 1878 by Carapanos. The sanctuary and oracle of Zeus were brought to light. Historical, literary and archaeological evidence clearly confirm that Dodoni gained great political significance (in the sense of playing a role in internal or external state affairs) under the rule of Pyrrhos (297-272 B.C.) (Dakaris 1971b; Dieterle 1999). Earlier periods are not that well documented. The Late Prehistoric phase of Dodoni is so far poorly defined. Dakaris uncovered a thin disturbed prehistoric stratum under the Hellenistic Bouleuterion: traces of wooden huts, stone -lined postholes, bothroi, hearths, imitation and imported Mycenaean, matt-painted, and local coarse pottery (Dakaris 1967a; site # 43 in Gazetteer, chapter 3.3); these evidence points out towards a small settlement of local character (Dakaris 1967a; Wardle 1972: 194-216; Tartaron 1996: 52-53). This picture is very different from that suggested by the literary record.

A few points must be raised here. The first one is that there may be Late prehistoric phases and strata that have not yet been revealed by excavations. This accords well with the fact that excavation has been directed towards Hellenistic remains

rather than Prehistoric. Moreover, the area of the so-called acropolis has not been touched yet (Mee & Spawforth 2003). The second point relates to the history of Dodoni. We know that the area of the sanctuary went through a number of building programs: Pyrrhos built the theatre, the stadium and certain temples at the beginning of the 3rd century B.C., the Aetolians destroyed the site completely in 219 B.C., it was rebuilt in 218 B.C., and finally destroyed by the Romans in 167 B.C. Prehistoric strata may simply have been wiped out completely.

The literary and archaeological data appear to come together only from the later 8th century B.C. onwards, when bronze tripods, warrior figurines, ornaments, and weapons have a possibly votive character , and can be dated by comparison with similar objects at other sanctuaries (Dakaris 1971c: 19; Hammond 1976: 407, n. 5; Dieterle 1999: IV,1; Soueref 2001: 49-61). Earlier periods, although well documented in terms of literature, still remain archaeologically questionable.

PART 2

THE CERAMIC RECORD OF THE IOANNINA NOMOS IN LATE PREHISTORY

2.1: Introduction

The contribution of pottery is undoubtedly central to archaeological research, since pottery comprises the most common archaeological material in most surveys and excavations in Greece as elsewhere. Studies, ideas, typologies, descriptions, classification schemes, parallels, comparisons, methods and interpretations based upon pottery are numerous and central to reports and publications of archaeological character. Pottery provides the archaeologist with information on many aspects of the past, including chronology, technology, trade and everyday life. Sherds, whole pots, fabrics, decorative themes and motifs, sketches and drawings, photographs with colour and scale references, are tackled and employed by the archaeologist in an attempt to gain further insights into the past. Researchers, archaeologists and specialists continue to spend time and energy to find ways to improve the information obtainable. These efforts have led to developments and applications of scientific, statistical and computer techniques, methods and applications.

This chapter is an attempt to analyse the typologies applied to the pottery record of the Ioannina nomos in Late Prehistory taking into account all of the above. My input is as follows:

(a) I briefly present, discuss and comment on current classification schemes, old and new, published and/or not-yet-published (chapters 2.2.1 – 2.2.4)

(b) Expanding on the latest of the pottery classification schemes, I offer a quantification approach to the ceramic material available from the 1997 excavation works on the Late Prehistoric settlement of Liatovouni, in the district of Konitsa, in the northern part of the Ioannina nomos (site # 6, see chapter 2.2.5)

(c) Based upon current classification schemes, I present the Late Prehistoric pottery record of the Ioannina nomos from a merged quantitative perspective that I find more approachable, educative and practical (chapters 2.3 and 2.4)

Reminder: As noted above (see Preface), the symbol # followed by a number stands for the site number in the Gazetteer of the Late Prehistoric sites of the Ioannina nomos (chapter 3.3).

2.2: Late Prehistoric Pottery Classification Schemes for Northwestern Greece: Mycenaean-inspired Pottery and Local Wares

In this part, I am offering an overview of the Late Prehistoric pottery of the Ioannina nomos, and Epirus in its wider context, as it has been approached by various archaeological studies until today. This effort may be seen as an attempt to present, summarise, expand, compare and discuss the common ground, the differences and the history of the classification schemes that have characterised archaeological approaches to the Late Prehistoric pottery record of the area. It is hoped that this part will serve as the background to a merged pottery classification scheme, which is proposed and discussed further below (chapter 2.3).

The work of Evangelidis (1935) is the first attempt to describe the coarse pottery excavated in the area of the later sanctuary at Dodoni (site # 43). Evangelidis' efforts aimed to establish a connection with the coarse fabrics of Bronze Age Macedonia and Thessaly, but they did not go as far as producing a complete typology for the coarse wares he studied. From Evangelidis' work onwards, the Late Prehistoric pottery of Epirus and the Ioannina nomos has been approached through three classification schemes, presented here in the order of their formulation:

1. the so-called **Kastritsa classification (or K classification)**, a scheme of four classes (K I – K IV), which was introduced sixteen years after Evangelidis' work by Dakaris (1951). It is based upon finds from the site of Kastritsa (site # 29) and enhanced by later refinements and additions, such as the unification of the K II and K III categories to form K II/III (Wardle 1972: 208-209), the Orange-Red Ware (Wardle 1972: 204-207; Wardle 1977: 180-181) and the K II/III Minyan subset (Tartaron 1996: 220-223). The Kastritsa scheme is the first and most widely used classification scheme for the Late Prehistoric pottery of Epirus and the Ioannina nomos. For an overview see chapter 2.2.2 below.

2. the so-called **Krya classification**, based upon finds from the site of Krya (site # 31). For an overview of the Krya scheme see chapter 2.2.3 below.

3. the so-called **Liatovouni classification**, based upon finds from the site of Liatovouni (site # 6). For an overview of the Liatovouni scheme see chapters 2.2.4 and 2.2.5 below.

The Krya and the Liatovouni schemes were developed from the starting point of Kastritsa thanks to the excavation and post-excavation projects led by Drs Zachos and Douzougli, Ephors of Antiquities in the last decade. The Krya and Liatovouni

typologies are still under study and are not yet fully published and analysed. Zachos (1997) is the latest reference for the Krya typology and Douzougli (1996; 1997) for the Liatovouni. Part of the present work, especially chapter 2.2.5 (entitled 'Expanding on the Liatovouni pottery record: introducing a pottery quantification approach'), aims to further their efforts to fully present and publish the archaeological work conducted at Liatovouni (site # 6).

I consider as a fourth scheme the pottery of Mycenaean character, for which I use the term 'Mycenaean inspired', which refers to pottery of Mycenaean character. This pottery may comprise Mycenaean wares, locally made imitation-Mycenaean vessels/sherds and/or imported imitation-Mycenaean pots/sherds. Mycenaean inspired pottery is either approached as part of the above schemes or as a category on its own, and it is dominated by fragments of locally made kylikes of Mycenaean type. This class will be briefly presented below (chapter 2.2.1), and will be followed by a brief description and commentary on the local pottery classification schemes (chapters 2.2.2 – 2.2.5).

2.2.1. The Mycenaean-inspired Pottery

Mycenaean inspired pottery and objects have received enormous attention from scholars and researchers of northwestern Greece, due to the fact that, unlike local wares, they are readily datable. These artefacts also signify the impact of the Mycenaean world in the region.

Mycenaean inspired pottery can be divided into imported wheel-made Mycenaean pottery and local or imported imitation handmade pottery. The first type consists of fine vessels (very fine if compared to local handmade wares), which are well-fired but not of the best quality reached by the Mycenaean pottery from the south (Soueref 2001: 82-83). Decorative geometric patterns are not uncommon. The most common shape is the kylix followed by the stirrup jar, and there are also a few sherds of alabastra, cups, small kraters, deep bowls, stemmed bowls and other shapes difficult to define. The second type includes coarser local fabric but the shapes and surface treatment derive directly from Mycenaean prototypes. For an overall account of Mycenaean and Mycenaean inspired pottery of Epirus, see Soueref (2001: 82-91, 177-178).

All types of Mycenaean inspired pottery are attested at only 13% of known Late Prehistoric sites in the Ioannina nomos (see also chapter 3.2.3.3C), a statistic that should encourage caution in interpretation and analysis. Wardle counted around 180 sherds

from Dodoni (site # 43, 4% of the pottery collected from the prehistoric stratum). most of which were so small and poorly preserved that few valid conclusions could be drawn about Mycenaean ceramics and their local role (Wardle 1977: 194-216). From neighbouring Southern Albania relatively little information is available and published (Islami & Ceka 1964: 96; 119, Prendi 1982: 212; Wardle 1993: 120; Bejko 1994: Kamberi 1994; Touchais 1997: 94-101; Touchais 2002: 207-208, 212-213; Prendi 2002: 93-96). It is worth mentioning that Mycenaean inspired pottery has recently been discovered in the lower strata of Krya (site # 31) and Liatovouni (site # 6).

Mycenaean inspired pottery will be more extensively presented in chapter 2.3.6, as a class of the merged pottery classification scheme to be proposed.

2.2.2. Local Wares: the Kastritsa Classification Scheme

Table 2.2.2a: Classes of the Kastritsa classification scheme

- K I
- K II
- K III
- K IVa
- K IVb
- Pottery of Mycenaean character
- K II / K III unified
- K II/III Minyan subset
- Orange – Red

See also pl. 9

A classification of the locally made wares was developed on the basis of several prehistoric fabric types recognized in the excavations at Kastritsa (site # 29) in 1951 and 1952 (Dakaris 1951: 177–183; Dakaris 1952). Dakaris divided the handmade pottery into four categories (I–IV), also known as K ("Kastritsa") I–IV, with K I referring to Neolithic pottery. Mycenaean and imitation Mycenaean wares (both local handmade and imported) constituted separate categories. This taxonomy has framed the discussion of prehistoric pottery in Epirus (Hammond 1967; see Tartaron 1996: 189-242 for a detailed overview). By the term 'local pottery', archaeologists used to refer to local handmade coarse pottery of the types of Dakaris. It should be noted that local handmade pottery comprise the single most common (and sometimes the only) category of finds from most Late Prehistoric sites in Epirus, including those in the Ioannina nomos (see also table 3.2.3.3Ca). According to Dakaris' typology and interpretation:

K I vessels are represented in very small quantities by sherds with impressed and/or incised decoration. Dakaris (1951: 177–178) compared them with Neolithic

pottery from Sesklo and Dimini in Thessaly and Choirospilia on Lefkas, and assigned them a Neolithic date, a conclusion that has been questioned on the basis of new developments and research (Tartaron 1996: 190). It is true that Neolithic pottery from Epirus has K I and K II characteristics, but there are also significant differences. To use the recent example of Neolithic pottery from Doliana, it is clear that Neolithic wares come in a greater variety of shapes, exhibit superior execution, fabrics are harder, and the decoration is more elaborate (for Neolithic pottery from the Ioannina nomos, as well as for the transition to the Bronze Age, see Douzougli & Zachos 1994 and Douzougli & Zachos 2002).

K II vessels are coarse to very coarse, generally thick and heavy, and were likely used primarily for storage, transport, and cooking. Most are undecorated, although plastic elaboration of the exterior surface in the form of lumps and impressed bands is not uncommon. K II was thought to have appeared in Epirus at the beginning of the Bronze Age (Evangelidis 1935: 210; Dakaris 1952: 369).

K III vessels appear in smaller quantities and differ from K II in certain important respects: the fabric is finer, firing is more complete and the vessel's surface is normally black, often smoothed or burnished. K III is characterised also by smaller vessels and shapes that suggest its use as table ware. A general similarity in shapes and surface treatment to Minyan ware persuaded Dakaris to consider K III pottery as the product of the first «Greeks» to emigrate to Epirus from the south in the Early Helladic III-Middle Helladic periods (Dakaris 1952: 372; see also Poursat 1987:32-33).

Whereas K II sherds are often found alone, those of K III are never found without K II. Therefore, in the absence of other datable materials, the sites at which K II sherds were found were dated to the Early Bronze Age (Dakaris 1952: 384; Papadopoulos 1976: 272), while the presence of K III ware contributed to an attribution to the Middle Bronze Age, although certain bronze artefacts were also thought to belong to the Middle Bronze Age (Dakaris 1951: 178-180; Dakaris 1952: 369-373; Papadopoulos 1976: 272-273). This typology was widely applied as a chronological base by Papadopoulos in his account of the Epirote Bronze Age (1976: 336-338).

In comparison with the K I-III classes, **K IV vessels** are finer and better fired. Sometimes the smoothed surfaces are decorated with black and/or brown horizontal and vertical lines ("matt-painted" according to Dakaris 1952). K IV comes in small shapes and is similar to the so-called Boubousti type from western Macedonia (Romiopoulou 1971: 353-361; Hochstetter 1982: 201-219; Vokotopoulou 1986: 255-276). It is the type of Epirote local pottery least frequently found and in the smallest quantities. Dakaris suggested two variants, K IVa and K IVb. The latter was later given an Early Iron Age date, based upon comparisons with other Iron Age wares from Vitsa (class I. Vokotopoulou 1986: 362). Dakaris considered this pottery to be of Western

Macedonian origin, and thus as evidence for the immigration of the Molossoi from Western Macedonia to Epirus (Dakaris 1964b: 8, 14, 44).

K II/III unification and the K II/III Minyan subset: Wardle reached a different conclusion based on intensive study of prehistoric sherds from many sites in northwestern Greece. His analysis of about three thousands sherds from Dodoni (site # 43), in terms of clay preparation, surface treatment and firing, demonstrated convincingly that K II and K III should not be considered separate fabrics in either a cultural or chronological sense, and that K III seems to represent the finer end of a homogeneous K II/III class (Wardle 1972: 194, 208-209; Wardle 1977: 181-187). Tartaron confirmed Wardle's observations and stressed that the Early and Middle Bronze Age dates assigned on the basis of the K II/III pottery have no real foundation on either stratigraphic or stylistic grounds. He added to the K II/III class a 'Minyan Inspired' subset, which he conceived as evolving from imitations of Minyan ware applied by the Epirote potters to the finer versions of the K II/III class (Tartaron 1996: 213-215, 239-242).

Orange-Red ware was also noted by Wardle as a category forming 16% of the Dodoni assemblages he examined (Wardle 1972: 204-207; Wardle 1977: 180-181). The ware is characterised by plain surfaces (not burnished, slipped or decorated in any way), and is handmade, evenly formed and fired to a porous, powdery, orange to red surface; it is probably the first ware in Epirus to be fired in a built kiln (Wardle 1972: 204; Wardle 1977: 181). Shapes comprise bowls and jugs. Orange-Red vessels are mainly known from body-sherds, few handles and bases. It has been dated from 1000 B.C. onwards (Wardle 1972: 206; Tartaron 1996: 234) and linked to Macedonian pottery assemblages (see pottery from the site of Boubousti, Heurtley 1926/1927). Tartaron (1996: 232) mentions that about 5% of the Ephyra pottery he examined (400 sherds in 43 randomly chosen excavated contexts) was of Orange-red ware (Tartaron, in press: ch. 5, Orange-red ware). This category appears at Krya (site # 31), Liatovouni (site # 6), and several sites in the Preveza nomos (Tartaron 1996).

The Kastritsa classification scheme was the only one based upon systematically excavated and published material from supposed settlements, i.e. from Dodoni (site # 43) and Kastritsa (site # 29), until the relatively recent systematic excavation works at Krya (site # 31) and Liatovouni (site # 6). It is therefore not surprising that it has formed the basis of all approaches to local Late Prehistoric pottery matters and arguments, as well as the starting point of the Krya and the Liatovouni schemes presented below (chapters 2.2.3, 2.2.4 and 2.2.5).

2.2.3. Local Wares: the Krya Classification Scheme

Table 2.2.3a: Classes of the Krya classification scheme

- Krya 1
- Krya 2
- Krya 3
- Krya 4a
- Krya 4b

Recent excavation at Krya (site # 31) revealed large quantities of almost exclusively handmade pottery. This pottery was divided by Zachos into four categories, briefly described below (Zachos 1997: 157-158).

Krya 1: Handmade coarse pottery, with plastic, impressed and/or incised decoration of decorative bands, lumps and pellets. Zachos states that this type is identical to K II.

Krya 2: Handmade semi-coarse pottery, mostly undecorated, and sometimes with burnished grey, blackish and brown surfaces. Zachos states that this type is identical to K III.

Krya 3: Handmade coarse orange-red pottery, with shapes including a stemmed kylix imitating the Mycenaean kylikes. This is the Orange-Red ware discussed in the chapter above.

Krya 4a and 4b: Matt-painted pottery, which is the equivalent of K IV. Krya 4 is further divided to the earlier Krya 4a and the later Krya 4b, equivalent to K IVa (12^{th} c. B.C. – 9^{th} c. B.C) and K IVb (from 9^{th} c. B.C., sub-Mycenaean and Proto-geometric).

Zachos' typology deviates from the Kastritsa one mainly by the addition of Wardle's Orange-red ware and the elimination of the K I category of 'Neolithic' pottery. The Krya typology has not yet been fully published and, consequently, it has not replaced the Kastritsa one.

2.2.4. Local Wares: the Liatovouni Classification Scheme

Table 2.2.4a: Classes of the Liatovouni classification scheme according to Douzougli 1997

- Liatovouni 1
- Liatovouni 2
- Liatovouni 3
- Liatovouni 4
- Liatovouni 5
- Liatovouni 6
- Liatovouni 7
- Liatovouni 8
- Liatovouni 9

Recent excavation works at Liatovouni (site # 6) revealed a Late Prehistoric settlement with large quantities of pottery, almost exclusively handmade. The

Liatovouni Late Prehistoric settlement was excavated in 1993, 1994 and 1997 under the direction and supervision of Drs Zachos and Douzougli, Ephors of Antiquities (Douzougli 1994: 367-370; Douzougli 1996: 18-25; Douzougli 1997: 557-559). The pottery discovered was initially studied and recorded on the premises of the Museum of Ioannina in autumn 1997 by a team of archaeologists including myself. Part of this work has been published by Douzougli, who presents and briefly discusses the nine general classes of the Liatovouni classification scheme as follows (Douzougli 1997: 557-558):

Liatovouni 1: Handmade, coarse, undecorated, unburnished ware of red-orange to dark brown colour.

Liatovouni 2: Handmade, coarse to semi-coarse, undecorated, slightly burnished ware of red-orange to dark brown colour.

Liatovouni 3: Handmade, coarse, undecorated ware of reddish-yellowish grey colour.

Liatovouni 4: Handmade, slightly burnished, polychrome ware (two or three colours).

Liatovouni 5: Handmade, coarse to semi- coarse, burnished, matt-painted ware, with or without plastic decoration.

Liatovouni 6: Handmade, coarse to semi- coarse ware with plastic or incised decoration.

Liatovouni 7: Wheelmade painted ware of Late Helladic date (Mycenaean inspired kylikes).

Liatovouni 8: Proto-geometric and Geometric pottery.

Liatovouni 9: Classical and Hellenistic pottery.

2.2.5. Expanding on the Liatovouni Pottery Record: Introducing a Pottery Quantification Approach

Douzougli offers the first steps towards drawing a typology of the Liatovouni material. Categories Liatovouni 1-6 refer to handmade local pottery, while categories Liatovouni 7-9 refer to datable material. Categories Liatovouni 8-9 are beyond the chronological limits of this thesis. The Liatovouni excavations have not yet been completed and are still under study by Drs Douzougli and Zachos. I was kindly given permission to deal with the pottery record from a quantification point of view. within the context of the Liatovouni classification scheme as it has initially been drawn during the relevant post-excavation works in the museum of Ioannina, and towards the final publication of the Liatovouni archaeological project (cemetery, settlement, topography and archaeological finds). Full publication including photographs, drawings and comparanda is currently under preparation by Douzougli. My initial results. ideas and arguments, as well as relevant limitations and problems, are presented in this chapter.

2.2.5.1. Excavations at Liatovouni: Settlement and Cemetery

Liatovouni is a low hill situated in the district of Konitsa, in the middle of the Konitsa plateau, a big part of which is covered by the flow of Aoos river, at the point where Aoos and Voidomates rivers meet. The Liatovouni hill is also characterized by two relatively large plateaux (about 60000 m^2) and the small church of Prophites Ilias at the peak of the hill.

The wider area of Liatovouni offers significant potential for human activity ever since the Upper Palaeolithic (see Bailey 1992 and Bailey 1997 for overviews). The area combines fresh water (rivers, tributaries and springs), high forests, and land for cultivation and pasture. Evidence for Neolithic occupation have not yet come to light, while human activity in Late Prehistory had been implied by the discovery of two bronze swords at Mesogephyra (site # 7). Thereafter, limited archaeological and historical information is available, until Late Byzantine and post-Byzantine times.

The Liatovouni hill as a source of archaeological material (pottery sherds) had been spotted by Hammond (1967: 254), but no systematic work had taken place before 1994. Hammond reported plenty of unpainted ceramics as well as the remains of a modern small fortress, which is not there anymore.

In 1994, quantities of sherds were reported to the 12th Ephorate of Prehistoric and Classical Antiquities from the northeastern plateau on Liatovouni Hill. The plateau lies about 30 m. higher than the confluence of the Aoos and Voidomates rivers. A trial trench was opened that year, and revealed the existence of a settlement with remains of ancient house walls made of large pebbles and debris. The source of the large pebbles used as building material was the nearby rivers. The actual number of houses is still unknown. 150m. east of the settlement, in an area under cultivation (barley and/or clover fields), whole vessels were reported. Archaeological excavations started immediately (summer 1994), and revealed part of a cemetery that is most probably associated with the settlement.

Excavations at the cemetery: It was estimated that the area of the cemetery is of about 175 m^2. The graves closer to the surface had been destroyed. Still, the first season revealed 37 untouched graves, all very rich in grave offerings: 43 vessels of clay, 5 bronze vessels, 2 glass vessels, 25 spearheads, 1 bronze sword, 25 bronze or silver belts, fibulae, rings and other jewelleries were unearthed (Douzougli 1996: 18). These burials are dated in the 10th and 5th c. B.C., (Early Iron Age and the Archaic and Classical period). According to the grave offerings, thirteen of the 37 revealed burials

are dated to 10^{th}-8^{th} c. B.C., nine are dated to 8^{th} c. B.C., three are dated to 7^{th} - 6^{th} c. B.C., and twelve are dated to 5^{th} c. B.C. A few bronze finds from destroyed graves must be dated to Late Helladic IIIB-C. Further work in the following years until 1997 (Douzougli 1997: 557) raised the amount of graves discovered to 103, of which 13 have been assigned a preliminary Late Prehistoric date on the basis of the finds (Dr A. Douzougli, personal communication).

Excavations at the settlement: The area of the settlement was systematically excavated in 1997. Eleven trenches of about 20 m^2 each were opened. Architectural structures found consist of remains of house walls built with limestone pebbles, as well as a thick wall (0.90-1.10 m. wide), probably marking the extent of the settlement. Part of another similar wall was excavated at a distance of about 200 m. south-southwest of the main Liatovouni settlement excavation, in a trial trench. In the settlement, two phases of habitation have been spotted, together with remains of hearths and a possible structure of burial character. The first phase is represented by some walls, a floor (layer of packed earth and small pebbles), a structure that has been identified as a hearth and a rock-cut water canal. The second phase, below the level of the first phase, is illustrated by some house walls, a slightly inclined stratum of packed earth, small pebbles and aggregate, which has been interpreted as part of a street, and a second floor with a hearth. Beneath that second floor and on the natural rock, a child burial bordered by pebble stones has been discovered, with a small two-handled skyphoid vessel. All buildings were on low platforms made of large limestone pebbles. No foundations have been noted. Walls were made of adobe bricks and wood.

In terms of finds, pottery consisting of local handmade wares dominated the archaeological record. Very few complete and almost complete pots have been discovered and reconstructed, together with thousands of pot sherds. Pottery has been initially assigned to a number of classes to be discussed below (chapter 2.2.5.2). Douzougli (1997: 558) reported four complete pots: a skyphos with raised handles (Hammond 1972: 281, f. 12; Hochstetter 1984: pl. 78,6), a deep phiale, a small kyathos, an amphoriskos decorated with a clay plastic band and ten fragments of kylikes of Mycenaean type. Other finds included clay weight looms, a small bird-shaped bead and a metal object, possibly part of a door. Overall, finds point towards a Late Prehistoric settlement (Late Bronze – Early Iron Age, c. 12^{th} – 10^{th} c. B.C.). The finds from the nearby cemetery suggest that human activity in the area lasted until the Classical period, a hypothesis that needs to be confirmed by further work on the settlement.

Remains of walls made of large pebbles and pot sherds can be seen in much smaller amounts all over the Liatovouni Hill.

For the Liatovouni topography, archaeological record, references and plates see also the relevant Gazetteer entry in chapter 3.3 (site # 6).

2.2.5.2. The Pottery Record from the Liatovouni Late Prehistoric Settlement: Categories – Typology

The pottery collected from the Late Prehistoric settlement of Liatovouni is almost totally handmade and has been preliminarily classified in the following categories, which comprise an expanded version of what Douzougli has reported (Douzougli 1997: 557-559; also see above chapter 2.2.4). Overall, pottery discovered at the Late Prehistoric settlement of Liatovouni seems to be of mainly domestic, everyday character, consisting of mostly open shapes (cups, one and/or two-handled skyphoi, smaller and bigger bowls, some kylikes), and few close shapes (flasks and amphoriskoi). The Liatovouni classes in their extended format are described below. The bulk of data quantified and analysed statistically is presented in the following chapters (chapter 2.2.5.3 and 2.2.5.4).

Liatovouni 1a: consists of plain orange-red or brown vessels with thin walls (1-8 mm thick). The clay is not well-fired and is refined, without inclusions. The surface of the sherds is often powdery, leaving traces of clay in the fingers. The core has in some case the same colour as the surface and sometimes it is grey, further indication of poor firing. Some sherds have slip. The surface of the sherds is unburnished and undecorated (no paint or any decoration of other type). Liatovouni 1a sherds have similarities with thin-wall vessels of the Orange-Red class of the Kastritsa classification and the Krya 3 class of the Krya classification (see above, chapters 2.2.2 and 2.2.3 respectively).

Liatovouni 1b: as Liatovouni 1a in terms of clay and general characteristics. The main difference has to do with the size of vessels, since 1a consists of plain orange-red or brown vessels with thicker walls (12+ - 42 mm thick). The clay is poorly fired, not as refined as that of Liatovouni 1a, with some inclusions (very small stones, calcite). Surfaces are undecorated, powdery, not burnished, but some sherds have slip. Liatovouni 1b vessels have similarities with thicker-wall vessels of the Orange-Red class of the Kastritsa classification and the Krya 3 class of the Krya classification (see above, chapters 2.2.2 and 2.2.3 respectively).

Liatovouni 1c: as Liatovouni 1a in terms of clay (poorly fired, orange-red and brown colour, no inclusions), surfaces (powdery, unburnished) and size (walls 5 – 8 mm. thick). The main difference is the existence of matt-painted decoration (black colour on slipped orange-red / brown surfaces). Liatovouni 1c vessels appear similar to thin-wall vessels of the K IVa class of the Kastritsa classification and the Krya 4a class of the Krya classification, with parallels in western Macedonia (Boubousti wares) (see above, chapters 2.2.2 and 2.2.3 respectively).

Liatovouni 2a: Liatovouni 2a pots can be perceived as burnished, slightly finer versions of Liatovouni 1a vessels. They are plain, orange-red or brown vessels, with thin walls (1 – 8 mm. thick), in refined clay with no inclusions. They are better fired in comparison with the Liatovouni 1a class, although sometimes they possess a grey core. The surface of the sherds is relatively shiny. Apart from the effects of burnishing, there is no decoration of any type on Liatovouni 2a pottery. Liatovouni 2a vessels could be a burnished version of thin-walled vessels that, if unburnished, would fall into the Orange-Red class of the Kastritsa classification and the Krya 3 class of the Krya classification (see above, chapters 2.2.2 and 2.2.3 respectively).

Liatovouni 2b: as Liatovouni 2a in terms of clay and general characteristics. The main difference has to do with the size of vessels, since 1a consists of plain orange-red or brown vessels with thicker walls (12+ - 23 mm thick). The clay is better fired, orange-red or brown, without inclusions in the thinner sherds and with a lot of inclusions in the thicker ones. Cores are of the same colour as the surfaces, with the exception of some grey to black cases. The surface of the sherds is generally more shiny in thinner vessels and less shiny in the thicker ones. Liatovouni 2b vessels could be a burnished version of thicker-walled vessels that, if unburnished, would fall into the Orange-Red class of the Kastritsa classification and the Krya 3 class of the Krya classification (see above, chapters 2.2.2 and 2.2.3 respectively).

Liatovouni 2c: very similar to the Liatovouni 2a class, with the addition of matt-painted decoration (black colour on the burnished orange-red or brown surfaces). The thickness of the walls is about 3 – 9 mm. The clay is refined, without inclusions, only occasionally with a grey core. Liatovouni 2c appears similar to burnished thin-wall vessels of the K IVa class of the Kastritsa classification and the Krya 4a class of the Krya classification, with parallels in western Macedonia (Boubousti wares): see above, chapters 2.2.2 and 2.2.3 respectively.

Liatovouni 3a: this class consists of greyish to whitish vessels, with 12 – 28 mm. thick walls, undecorated, with some examples of burnishing. The clay is not well

refined, with some inclusions, and with black cores. Sometimes the inner surface is of a different colour, most probably due to poor firing.

Liatovouni 3b: as Liatovouni 3a in terms of clay and general characteristics. The main difference has to do with the size of vessels. In Liatovouni 3b vessels, wall thickness ranges from 3 to 8 mm. Vessels are greyish to whitish in colour, the clay is refined with no inclusions, with black cores occasionally.

Liatovouni 4: this class has been named 'polychrome ware' and is represented by very few sherds. The most important characteristic of this class is the presence of two, even three, colours in the surface of the sherds, not as colour variations due to accidental reasons (poor firing, extensive use, post-depositional processes), but as painted decorative motifs in the shape of irregular bands. The clay is dark reddish-brown, without inclusions. Walls are 7 – 10 mm. thick. Surfaces are burnished, with occasional spots of a darker hue.

Liatovouni 5a: this consists of slipped and burnished undecorated pottery, with a distinctive dark brown to black colour. The clay has inclusions, and the walls of the vessels are 6 – 14 mm. thick

Liatovouni 5b: black slipped and burnished pottery, similar to Liatovouni 5a, with plastic decoration, usually on the upper parts of the body. The clay has inclusions, cores are sometimes of greyish-black colour, and the walls of the vessels are 6 – 16 mm. thick.

Liatovouni 6a: this class consists of coarse to very coarse, plain, unpainted pottery, with plastic, impressed and incised decoration. The clay is red to brown, has some inclusions, with cores occasionally darker than the surfaces. Vessel walls are 11 – 26 mm. thick. Surfaces are sometimes quite friable and sometimes slightly burnished. Liatovouni 6a sherds have similarities with the KII class of the Kastritsa classification and the Krya 1 class of the Krya classification (see above, chapters 2.2.2 and 2.2.3 respectively).

Liatovouni 6b: this consists of thin-walled vessels (3 – 8 mm.), is finer than Liatovouni 6a in terms of clay (refined, no inclusions) and surfaces (better treated and burnished), and is characterised by plastic, impressed and incised decoration, mainly in the form of bands and pellets. Liatovouni 6b sherds have similarities with the KIII class of the Kastritsa classification and the Krya 2 class of the Krya classification (see above, chapters 2.2.2 and 2.2.3 respectively).

Liatovouni 7: this is a category of datable Late Prehistoric pottery, mainly in the form of painted Mycenaean, imitation Mycenaean and sub-Mycenaean sherds.

Liatovouni 7 sherds have similarities with the KIII class of the Kastritsa classification and the Krya 2 class of the Krya classification (see above, chapters 2.2.2 and 2.2.3 respectively).

Liatovouni 8: wheel-made Proto-geometric and Geometric pottery, represented by very few surface sherds.

Liatovouni 9: wheel-made pottery of the Classical period, represented by very few surface sherds.

2.2.5.3. The Liatovouni Pottery Record: a Quantified Approach

Quantifying the Liatovouni pottery signifies the process of measuring in certain ways the huge amount of pot-sherds excavated during the periods of archaeological work at the site. Put simply, the fundamental requirement is to answer the general question 'How much pottery did we get?', which can mean 'how many vessels and/or sherds of type x have we discovered', 'what proportion is of type y and what of type z', etc.

Such questions are very typical in almost every archaeological excavation and a lot of energy has been dedicated to produce valid results. Since an amount of pottery is a sum of sherds almost always in a broken and incomplete state, measuring it has proved to have been both complicated and problematic, but certainly not unapproachable. Traditional methods refer to counting the number of sherds in different classes and/or measuring their weight, while lately new applications have appeared. During the 20th century many attempts have been practised and much effort has been applied to the theoretical and practical issues involved. The validity of different ways of measuring sherds has evoked the problem of quantification of pottery whose history has been summarised by Orton (1993a). The arguments and their backgrounds will not be repeated here but it can be noted that the widely accepted measures in order of significance are as follows (Orton & Tyers 1990; Orton & Tyers 1992; Orton et al. 1993: 21-22, 168-171):

- *Estimated vessel equivalents (EVEs)*, which is the estimated proportion of a complete vessel that is represented by a single sherd or a sherd family (=all sherds in a context belonging to the same vessel). It is measured on a scale of either 0 to 1 or 0% to 100%. It is considered as the most amenable measure for statistical analyses, and it was proposed by Orton 1975 (for its characteristics see Orton 1993a; Orton 1993b).
- *sherd weight*,
- *sherd counts*,

- *estimated vessels represented (EVREPs),* which is the estimated possible or minimum number of complete vessels in an assemblage, a measure not-easy-to-calculate (see Orton 1993a and Orton 1993b for a summary of its attributes).

Other interesting measures have also been proposed, like surface area covered by sherds of the same class (Hulten 1974) and displacement volume of pot sherds from the same class (Hinton 1977), but they have not been widely adopted in practice. Orton states that they are possibly expected to behave in a similar way to sherd weight (1993a:175,178).

Since estimated vessels represented (EVREPs) present many practical obstacles in gaining significant results (see Orton et al. 1993: 179), the Liatovouni team prepared ceramic processing charts to quantify pot sherds by means of EVEs, sherd weight and sherd counts. The result consists of about twenty six thousands pot sherds (25980 being the actual statistic), weighing more than a six hundred kilograms (617173 grams being the actual statistic) and recorded into a few hundred ceramic processing charts[1].

Apart from a number of rim sherds and base sherds, EVEs were not extensively estimated and therefore do not consist part of this research. Inference refers to sherd and weight counts and its main objective is to signal the existence of the first quantified assemblage for that particular period and region. Since the data corpus is available, future work may involve sampling strategies and EVE estimations to advance statistical analyses (correspondence analysis, transformations to *pottery information equivalents* and use of *Pie-slice*[2]). Although the present report is of general and preliminary character, with certain limitations pointed out further below (chapter 2.2.5.5), the analysis may hopefully provide a useful insight to the quantity and quality of a ceramic assemblage with potential for further study.

2.2.5.4. The Liatovouni Pottery Record: Data and Discussion

Some introductory points:

- All pot sherds discovered were collected. No sorting / dumping processes took place before or after the beginning of post-excavation work.

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[1] Special thanks to Drs Zachos and Douzougli, Ephors of Antiquities and Liatovouni Project leaders for their permission and advice. From this point I would like to thank Prof. Clive Orton for his availability and advise whenever needed. Of course, the author is the only person responsible for all possible mistakes, conclusions and methods used.

[2] It is a method of quantifying pottery developed by Orton and Tyers (1993). It transforms EVEs to new numbers (the so-called *pottery information equivalents* or just *pies*) which can be statistically manipulated by techniques designed for data in the form of counts. This method was also successfully tested to animal bone fragments (Moreno-Garcia et al. 1996) and most probably can be applied in all assemblages of broken objects. The techniques are carried out by the computer package Pie-slice (Orton & Tyers 1993).

- The pot sherds from the entire site have been considered as a totality and the bulk of sherds falling into each of the pottery classes (Liatovouni 1a, 1b, 1c, 2a, 2b, 2c, 3a, 3b, 4, 5a, 5b, 6a, 6b, 7, 8, 9) as a sub-total.
- As mentioned above, measures taken comprise sherd counts and weights of sherds. We tend to use sherd weight more often, especially when short-term comparisons are drawn, since it is considered more a more reliable quantifiable measure (that is without bias) than sherd counting (Orton 1982; Orton et al. 1993: 22, 171).
- Another good reason why sherd weights should work well in the Liatovouni pottery assemblage is the relatively small variation in wall thickness of the sherds. This reduces weight's main bias as a measure of the proportion of pottery types, which is that heavy types are expected to be over-represented in comparison with light ones (Orton et al. 1993: 169). An approach based upon the combination of the two measures, the so called Average Sherd Weight (AWS), is also attempted.
- The analyses consist of observations and the degree to which they reflect site formation process or functional and /or social practices is still questionable and only assumptions can be drawn at this stage.
- All information is graphically and numerically presented by means of tables, pie-charts and bar-charts, which form possibly the most important part of the discussion and analysis. All measurements were made by computer and through relevant programming, mostly in Microsoft Excel. Accuracy was up to two decimals.
- Computer programmes used: Microsoft Word 2000, Microsoft Access 2000, Microsoft Excel 2000.

<u>The data: discussing the sample of the Liatovouni pottery assemblage</u>

Excavation at the prehistoric settlement of Liatovouni produced 256 bags of pot sherds, corresponding to the 256 loci excavated from 11 trenches of 20 m^2 each. All pot sherds were washed and recorded in the Museum of Ioannina post-excavation room, for the process of recording to start. All sherds were divided in the classes presented above (chapter 2.2.5.2). Pot sherds from every bag were divided into diagnostics (bases, handles, rims and certain distinctive body sherds) and non-diagnostics (bulk of body sherds).

Sherd counts and sherd weights measurements were taken by archaeologists and volunteers. As noted above (chapter 2.2.5.3), the result consisted of 25980 pot sherds (19686 non-diagnostic and 6294 diagnostic sherds) weighing 617173 grams. Every single sherd was counted and classified, but time, budget and other practical constraints did not allow the completion of the weighing process in detail. All bags of pot sherds were weighed, in order for the above overall number to be produced, but only 23.44% of the bags (60 out of 256 bags, roughly one out of four) were opened for more detailed

weight measurements (per pottery class, diagnostic and non-diagnostic sherds). This 23.44% cannot be easily treated with statistical sampling theory, since it is not a statistically random/probability sample, i.e. a sample chosen so carefully that we know the probability of any particular unit being selected for it. The initial idea was to produce count, weight and EVE measurements for the whole pottery assemblage, since that would have achieved the first quantified pottery assemblage for the given period and region. The process started from what was judged as the most interesting and possibly most significant bags. This judgement was based upon thoughts and ideas based on personal experience and feel, rather than statistical techniques based upon sampling theory. Since this process had to be interrupted, this 23.44% represents a partly judgemental and partly grab sample, which is rather difficult to treat statistically (for these terms, as well as for sampling theory in archaeology, see Orton 2000: 20-21, chapter 2). However, I consider that this 23.44%, constituting almost ¼ of the whole assemblage, can be quite a significant sample that could contribute to efforts towards approaching both the sample population (the Liatovouni pottery assemblage as a whole) and the target population (the archaeology of the area and the Ioannina nomos). Possible ways are explored below.

The table below offers a descriptive summary of the data:

Table 2.2.5.4a: The Liatovouni pottery record: sherd counts and sherd weights

Pottery class	COUNTS: non-diagnostics	COUNTS: diagnostics	COUNTS: total	WEIGHT: non-diagnostics (in grams)	WEIGHT: diagnostics (in grams)	WEIGHT: total (in grams)
1a	807	150	957	4924.2	1608.4	6532.6
1b	1820	346	2166	41092.2	11043.4	52135.6
1c	0	3	3	0	110	110
2a	686	217	903	4804.8	2725.1	7529.9
2b	2584	681	3265	69659.4	24453.2	94112.6
2c	1	6	7	32	172.7	204.7
3a	883	247	1130	24071.4	7951.4	32022.8
3b	213	86	299	1650.1	1123.3	2773.4
4	0	0	0	0	0	0
5a	6	2	8	155	15.9	170.9
5b	0	0	0	0	0	0
6a	0	303	303	0	13187.2	13187.2
6b	0	31	31	0	292.5	292.5
7	0	195	195	0	4011.4	4011.4
8	0	17	17	0	100.6	100.6
9	0	13	13	0	61.8	61.8
TOTALS	**7000**	**2297**	**9297**	**146389.1**	**66856.9**	**213246**

An initial benefit from the table above is the opportunity to re-evaluate our sample, as in the table below:

Table 2.2.5.4b: Re-evaluating the sample of Liatovouni pot sherds

	Overall	**Sample**	**%**
Bags / Loci	256	60	23.44 %
COUNTS: non-diagnostics	19686	7000	35.56 %
COUNTS: diagnostics	6294	2297	36.50 %
COUNTS: total	25980	9297	35.78 %
WEIGHT: non-diagnostics (in grams)	unknown	146389.1	unknown
WEIGHT: diagnostics (in grams)	unknown	66856.9	unknown
WEIGHT: total (in grams)	617173	213246	**34.55 %**

It seems that counts and weight measurements indicate that our sample comprises a bit more than one third, rather than one fourth of the pottery assemblage, as suggested by the bags/loci of pottery. Sherd counts (non-diagnostics, diagnostics and total) and sherd weights (total) imply a sample ranging from 34.55% (sherd weight total) to 36.51% (sherd count diagnostics). As sherd weight is considered more appropriate than sherd count, our sample size is re-evaluated to the percentage emerging from total sherd weight (34.55%). This re-evaluation makes the sample even more significant.

The data: discussing the distribution of the Liatovouni pottery classes

The table and pie charts below present distributions of pottery classes in the Liatovouni assemblage (tables 2.2.5.4c, 2.2.5.4d, 2.2.5.4e, and 2.2.5.4f).

Table 2.2.5.4c:
The Liatovouni pottery assemblage: distributions of pottery classes based on sherd weights

Pottery class	WEIGHT: non-diagnostics (in grams)	Percentage of the total (%)	WEIGHT: diagnostics (in grams)	Percentage of the total (%)	WEIGHT: total (in grams)	Percentage of the total (%)
1a	4924.2	3.36 %	1608.4	2.41 %	**6532.6**	**3.06 %**
1b	41092.2	28.07 %	11043.4	16.52 %	**52135.6**	**24.45 %**
1c	0	0 %	110	0.16 %	**110**	**0.05 %**
2a	4804.8	3.28 %	2725.1	4.08 %	**7529.9**	**3.53 %**
2b	69659.4	47.59 %	24453.2	36.58 %	**94112.6**	**44.13 %**
2c	32	0.02 %	172.7	0.26 %	**204.7**	**0.10 %**
3a	24071.4	16.44 %	7951.4	11.89 %	**32022.8**	**15.02 %**
3b	1650.1	1.13 %	1123.3	1.68 %	**2773.4**	**1.30 %**
4	0	0 %	0	0 %	**0**	**0 %**
5a	155	0.11 %	15.9	0.02 %	**170.9**	**0.08 %**
5b	0	0 %	0	0 %	**0**	**0 %**
6a	0	0 %	13187.2	19.72 %	**13187.2**	**6.18 %**
6b	0	0 %	292.5	0.44 %	**292.5**	**0.14 %**
7	0	0 %	4011.4	6 %	**4011.4**	**1.88 %**
8	0	0 %	100.6	0.15 %	**100.6**	**0.05 %**
9	0	0 %	61.8	0.09 %	**61.8**	**0.03 %**
TOTALS	146389.1	100 %	66856.9	100 %	**213246**	**100 %**

Table 2.2.5.4d: Liatovouni pottery classes: pie chart on overall sherd weights

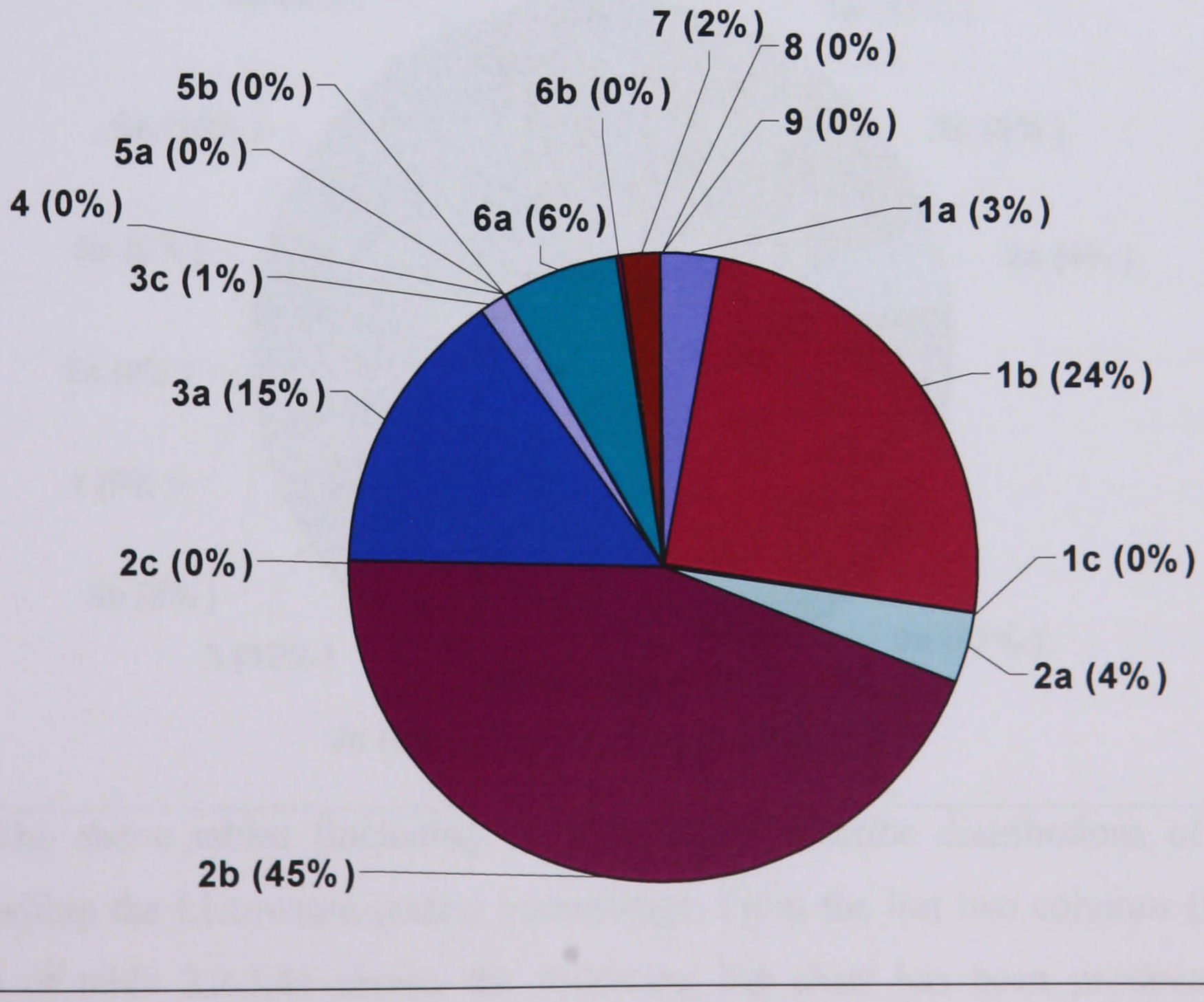


Table 2.2.5.4e: Liatovouni pottery classes: pie chart on non-diagnostic sherd weights

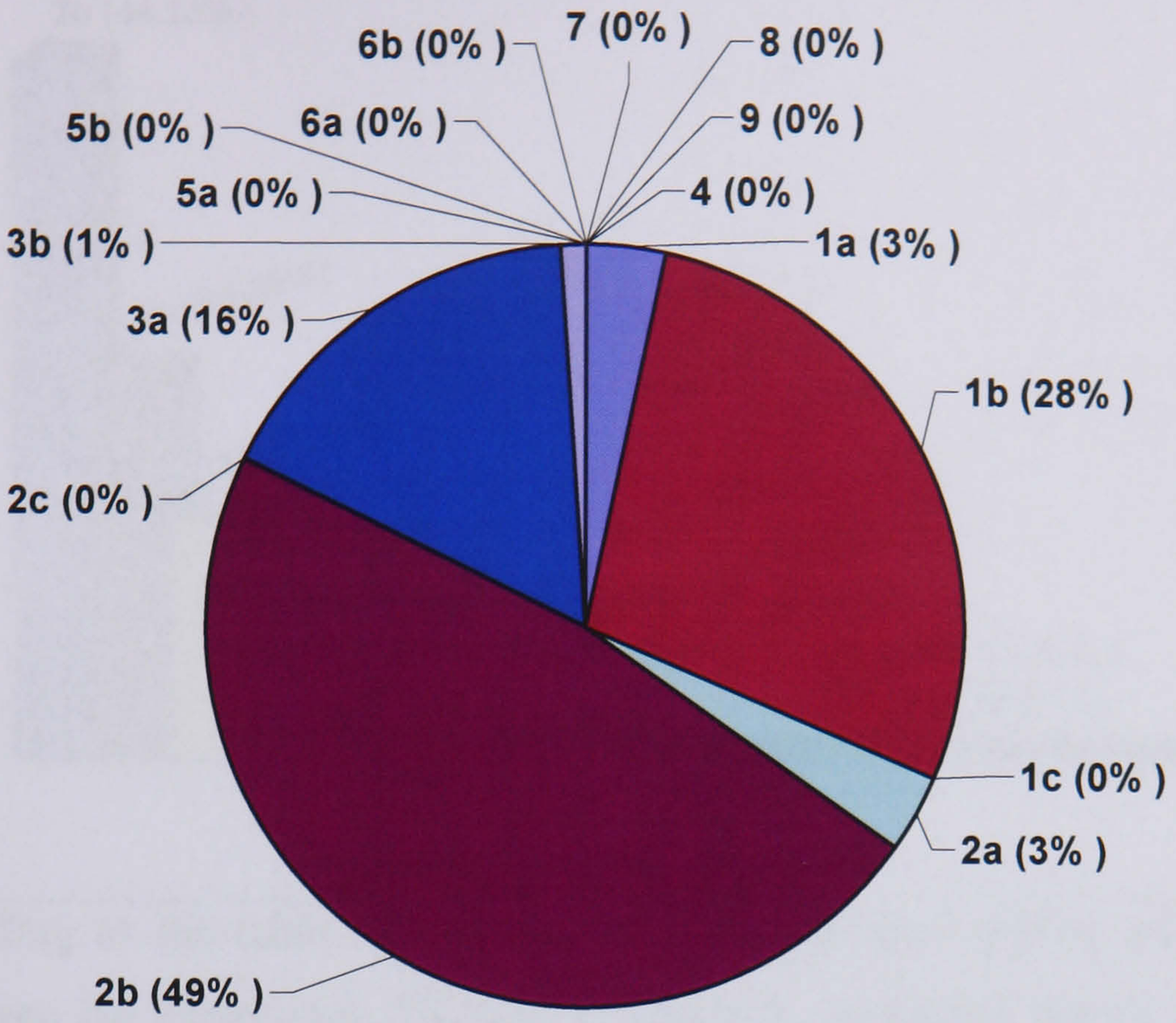
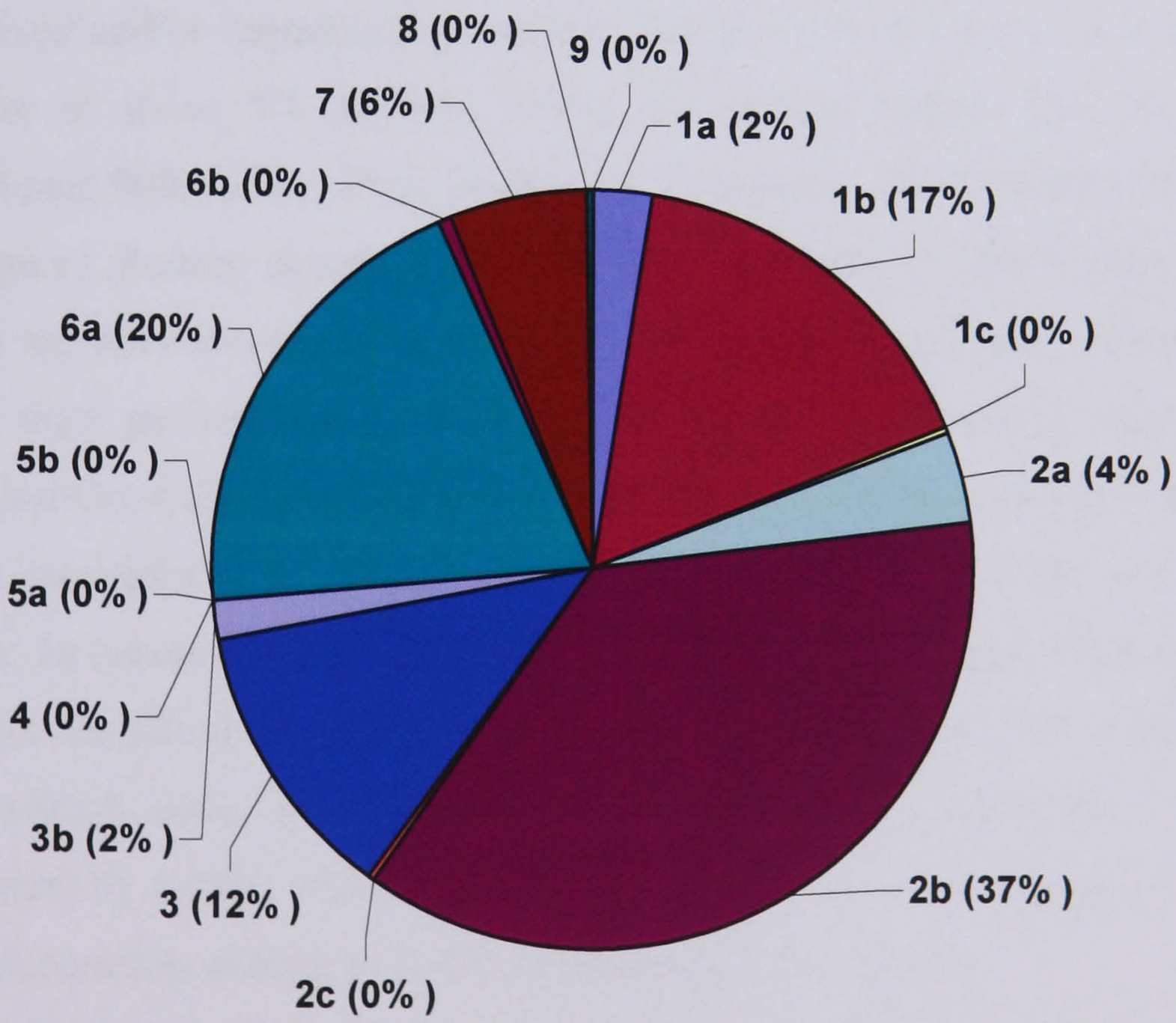
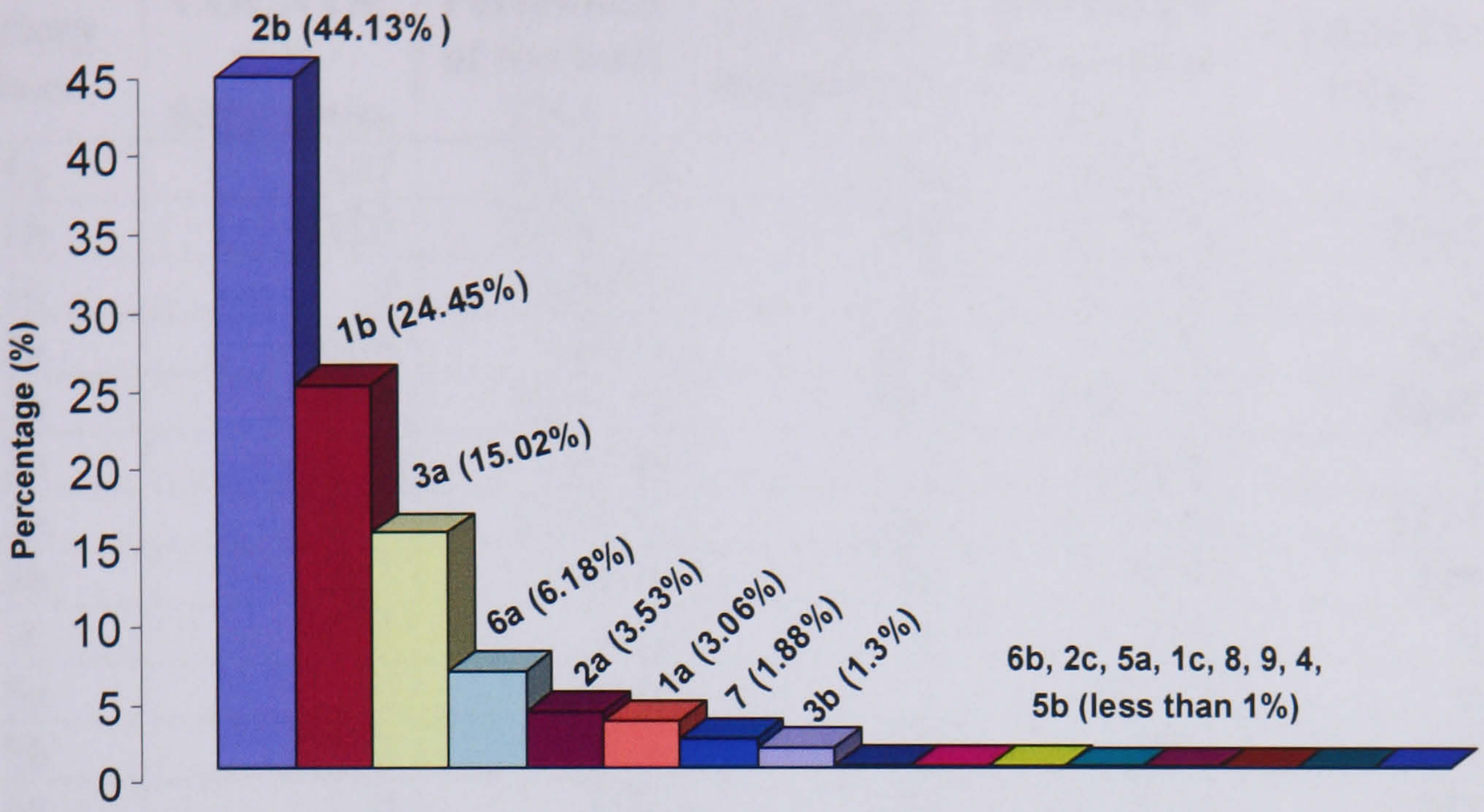


Table 2.2.5.4f: Liatovouni pottery classes: pie chart on diagnostic sherd weights



The above tables (including the pie charts) describe distributions of pottery classes within the Liatovouni pottery assemblage. From the last two columns (the ones in bold) of table 2.2.5.4c above, the following bar chart has been produced (table 2.2.5.4g):

Table 2.2.5.4g:
Liatovouni pottery classes in descending order: bar chart on overall sherd weights



According to the table above, most of the excavated pottery (44.13%) in the sample falls into the Liatovouni 2b class (burnished orange-red ware). Liatovouni 1b (not burnished orange-red ware) follows with 24.45%. Liatovouni 3a (greyish / whitish ware) comes third with a percentage of 15.02%, and Liatovouni 6a (coarse ware with plastic, incised and/or impressed decoration, similar to K II / Krya 1) is the last class with a score of above 5% (6.18%). These four pottery classes (2b, 1b, 3a and 6a) comprise almost 90% of the whole assemblage in terms of sherd weights (89.78% is the accurate figure). Pottery classes 4 (polychrome ware) and 5b (black ware with plastic decoration) are not represented at all, while 1c (not burnished matt painted ware), 2c (burnished matt painted ware), 5a (black burnished undecorated ware), 8 (Proto-geometric and Geometric pottery) and 9 (Classical pottery) just appear in the sample in very small quantities. The rest of the classes comprise small minorities within the assemblage: 1a (small not burnished orange-red ware) and 2a (small burnished orange-red ware) scored just above 3% (3.06% and 3.53% respectively). Liatovouni 3b (small greyish / whitish ware) is represented by a 1.30% and Liatovouni 7 (Mycenaean inspired wares) by 1.88%, while Liatovouni 6b (coarse ware with plastic, incised and/or impressed decoration, similar to K III / Krya 2) has a tiny 0.14%.

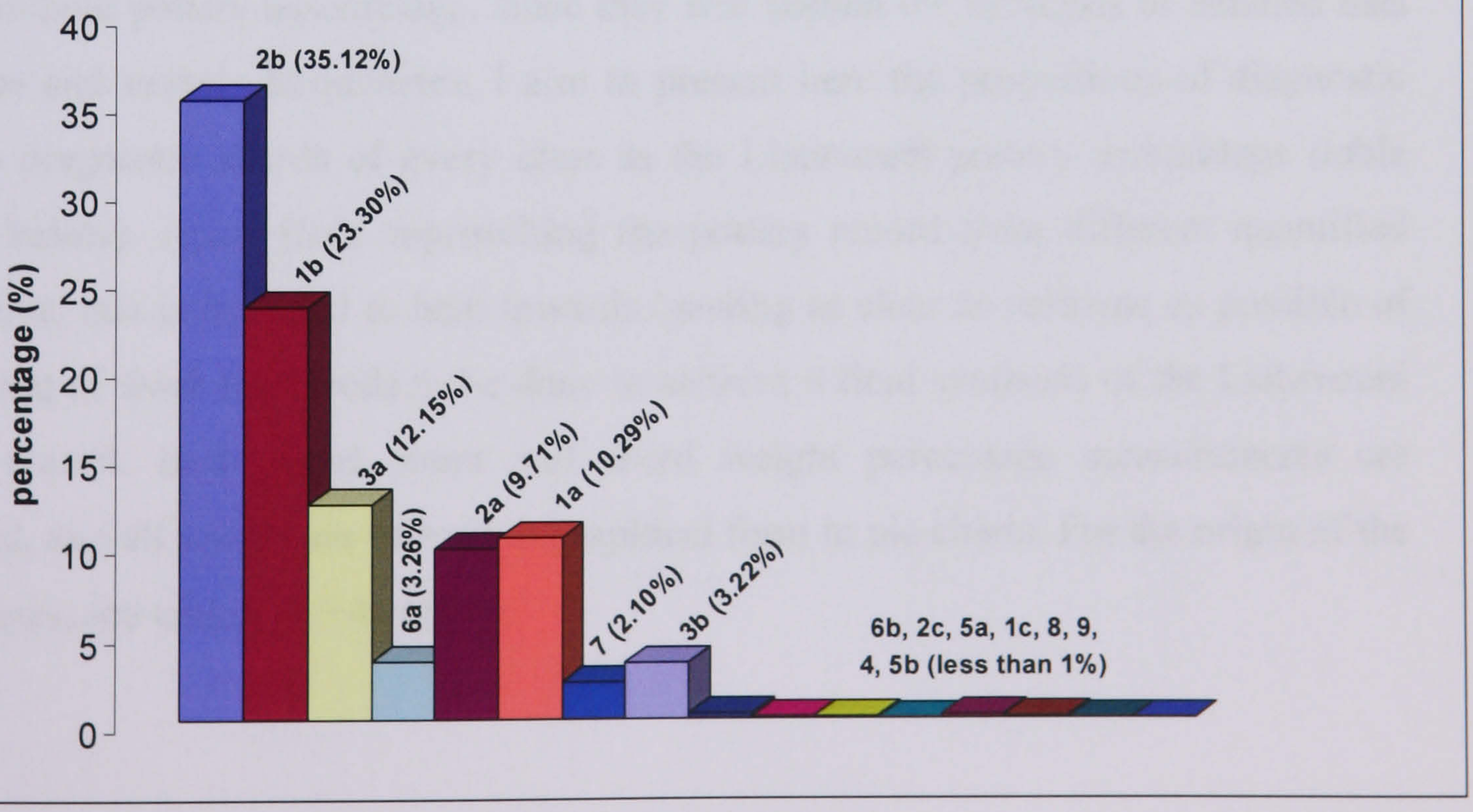
The dominance of the 2b, 1b, 3a, and 6a classes was to a certain extent expected, due to the fact that these classes consists of relatively large and thicker vessels. Therefore this impressive 90% has to be approached with some caution. To further check these results, I decided to produce a similar table and bar chart for sherd counts in our sample (tables 2.2.5.4h and 2.2.5.4i below):

Table 2.2.5.4h:
The Liatovouni pottery assemblage: distributions of pottery classes based on sherd counts

Pottery class	COUNTS: non-diagnostics	Percentage of the total (%)	COUNTS: diagnostics	Percentage of the total (%)	COUNTS: total	Percentage of the total (%)
1a	807	11.53 %	150	6.53 %	**957**	**10.29 %**
1b	1820	26.00 %	346	15.06 %	**2166**	**23.30 %**
1c	0	0.00 %	3	0.13 %	**3**	**0.03 %**
2a	686	9.80 %	217	9.45 %	**903**	**9.71 %**
2b	2584	36.91 %	681	29.65 %	**3265**	**35.12 %**
2c	1	0.01 %	6	0.26 %	**7**	**0.08 %**
3a	883	12.62 %	247	10.75 %	**1130**	**12.15 %**
3b	213	3.04 %	86	3.74 %	**299**	**3.22 %**
4	0	0 %	0	0 %	**0**	**0 %**
5a	6	0.09 %	2	0.09 %	**8**	**0.09 %**
5b	0	0 %	0	0 %	**0**	**0 %**
6a	0	0 %	303	13.19 %	**303**	**3.26 %**
6b	0	0 %	31	1.35 %	**31**	**0.33 %**
7	0	0 %	195	8.49 %	**195**	**2.10 %**
8	0	0 %	17	0.74 %	**17**	**0.18 %**
9	0	0 %	13	0.57 %	**13**	**0.14 %**
TOTALS	7000	100 %	2297	100 %	**9297**	**100 %**

From the last two columns of the table above (the ones in bold), the following bar chart has been produced (table 2.2.5.4i), following the order as suggested by table 2.2.5.4g (bar chart on overall sherd weights):

Table 2.2.5.4i:
Liatovouni pottery classes in table 2.2.5.4g-like order: bar chart on overall sherd counts



It can be seen from these two tables that the Liatovouni 2b class (burnished orange-red ware), 1b class (not burnished orange-red ware) and 3a (greyish / whitish

ware) dominate in sherd counts as well, having scored 35.12%, 23.30% and 12.15% respectively. Pottery classes 4 (polychrome ware) and 5b (black ware with plastic decoration) are not represented at all, while 1c (not burnished matt painted ware), 2c (burnished matt painted ware), 5a (black burnished undecorated ware), 8 (Proto-geometric and Geometric pottery) and 9 (Classical pottery) are manifested by less than 20 sherds each. Class 6b (coarse ware with plastic, incised and/or impressed decoration, similar to K III / Krya 2) is represented by 31 sherds (0.33%). The sherds of the 6a class (coarse ware with plastic, incised and/or impressed decoration, similar to K II / Krya 1 vessels), which scored a 3.26% in sherd counts and 6.8% in sherd weights, are big and/or heavy. The opposite applies to classes 2a (small burnished orange-red ware) and 1a (small not burnished orange-red ware), which scored low in sherd weights (3.53% and 3.06% respectively) and high in sherd counts (9.71% and 10.29% respectively), a fact that is explained by vessels' shape and manufacture (small pots with thin walls). I consider quite significant for chronological and cultural reasons the fact that 2.10% of the sherds (195 sherds in total) belong to class 7 (Mycenaean inspired), a hypothesis that, among other things, remains to be tested by future full publication of the Liatovouni project.

The data: diagnostics versus non-diagnostics within each category

Diagnostic sherds will be the basis for the development and full publication of the Liatovouni pottery assemblage, since they will sustain the synthesis of detailed lists of shapes and vessels frequencies. I aim to present here the proportions of diagnostic and non diagnostic sherds of every class in the Liatovouni pottery assemblage (table 2.2.5.4j below). Apart from approaching the pottery record from different quantified perspective, this is intended to help towards creating as clear an estimate as possible of the amount of work that needs to be done to achieve a final synthesis of the Liatovouni pottery record. Both sherd count and sherd weight percentage measurements are presented, and all results are offered in graphical form in pie charts. For the origin of the percentages, see table 2.2.5.4a above.

Table 2.2.5.4j: The Liatovouni pottery record: sherd counts and sherd weights in percentages

Pottery class	COUNTS: diagnostics	COUNTS: non-diagnostics	COUNTS: total	WEIGHT: diagnostics	WEIGHT: non-diagnostics	WEIGHT: total
1a	15.67 %	84.33 %	100 %	24.62 %	75.38 %	100 %
1b	15.97 %	84.03 %	100 %	21.18 %	78.82 %	100 %
1c	100 %	0 %	100 %	100 %	0 %	100 %
2a	24.03 %	75.97 %	100 %	36.19 %	63.81 %	100 %
2b	20.86 %	79.14 %	100 %	25.98 %	74.02 %	100 %

Table 2.2.5.4j (cont.):
The Liatovouni pottery record: sherd counts and sherd weights in percentages

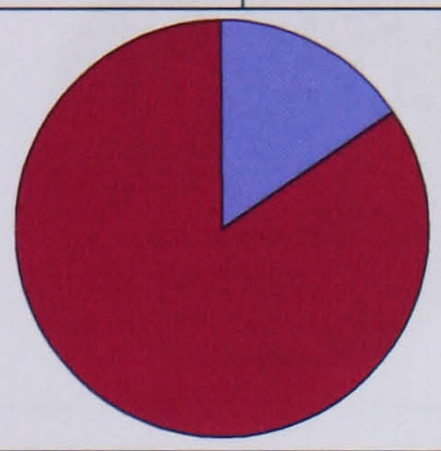
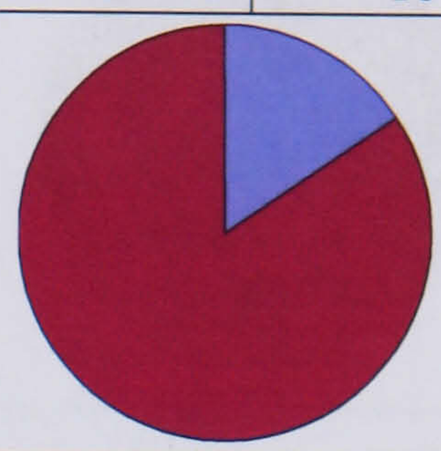
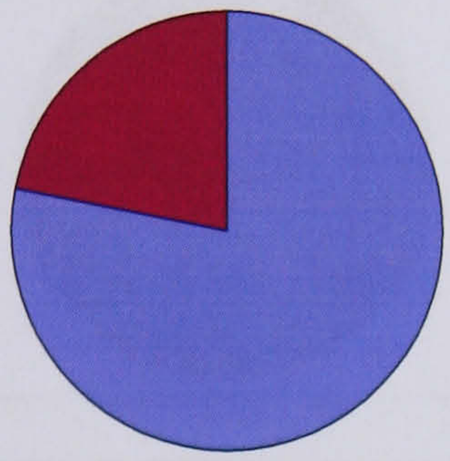
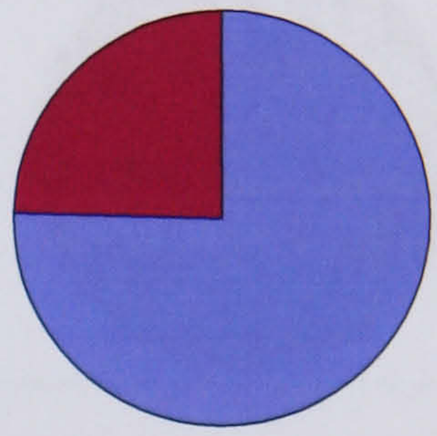
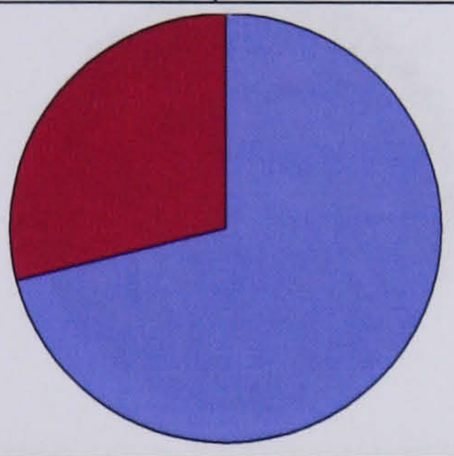
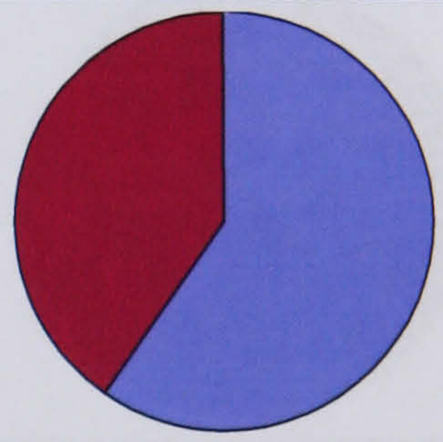
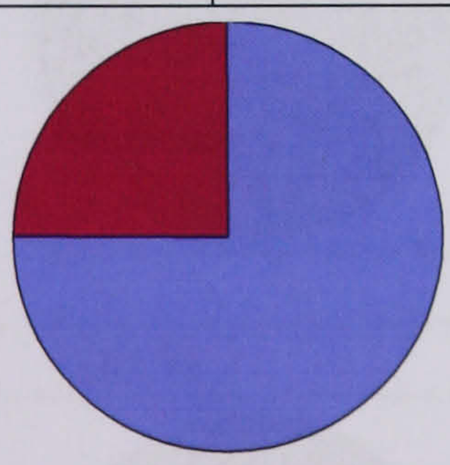
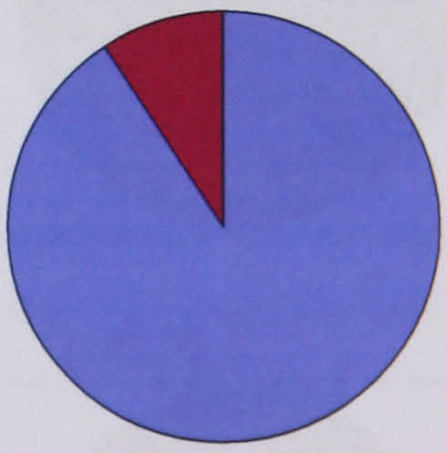
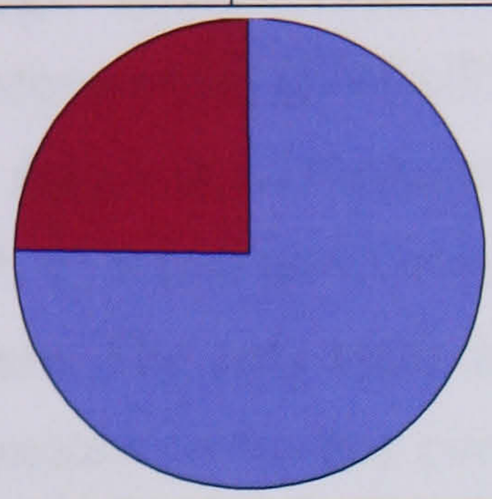
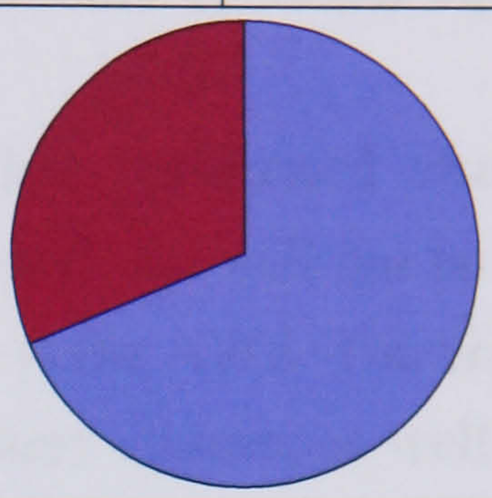
Pottery class	COUNTS: diagnostics	COUNTS: non-diagnostics	COUNTS: total	WEIGHT: diagnostics	WEIGHT: non-diagnostics	WEIGHT: total
2c	85.71 %	14.29 %	100 %	84.37 %	15.63 %	100 %
						
3a	21.86 %	78.14 %	100 %	24.83 %	75.17 %	100 %
						
3b	28.76 %	71.24 %	100 %	40.50 %	59.50 %	100 %
						
4	0 %	0 %	0 %	0 %	0 %	0 %
	----			----		
5a	25.00 %	75.00 %	100 %	9.30 %	90.70 %	100 %
						
5b	0 %	0 %	0 %	0 %	0 %	0 %
	----			----		

Table 2.2.5.4j (cont.):
The Liatovouni pottery record: sherd counts and sherd weights in percentages

Pottery class	COUNTS: diagnostics	COUNTS: non-diagnostics	COUNTS: total	WEIGHT: diagnostics	WEIGHT: non-diagnostics	WEIGHT: total
6a	100 %	0 %	100 %	100 %	0 %	100 %
6b	100 %	0 %	100 %	100 %	0 %	100 %
7	100 %	0 %	100 %	100 %	0 %	100 %
8	100 %	0 %	100 %	100 %	0 %	100 %
9	100 %	0 %	100 %	100 %	0 %	100 %

Table 2.2.5.4j (cont.):
The Liatovouni pottery record: sherd counts and sherd weights in percentages

Pottery class	COUNTS: diagnostics	COUNTS: non-diagnostics	COUNTS: total	WEIGHT: diagnostics	WEIGHT: non-diagnostics	WEIGHT: total
Overall	24.72 %	75.28 %	100 %	31.35 %	68.65 %	100 %
						

Some comments on and from the table above:

(a) All sherds from classes 1c (not burnished matt painted ware), 6a (coarse ware with plastic, incised and/or impressed decoration, similar to K II / Krya 1 vessels), 6b (coarse ware with plastic, incised and/or impressed decoration, similar to K III / Krya 2), 7 (Mycenaean inspired pottery), 8 (Proto-geometric and Geometric pottery) and 9 (pottery of the Classical period) have been recorded as diagnostics.

(b) The 2c pottery class (burnished matt painted ware) has very few non-diagnostic sherds.

(c) Liatovouni 4 (polychrome ware) and 5b (black ware with plastic decoration) are not represented at all.

(d) In the remaining pottery classes, diagnostics seem to form a bigger percentage of sherd weights as opposed to sherd counts, with class 5a (black burnished undecorated ware) being the only exception. Within these classes, as well as overall, sherd counts indicate that diagnostic sherds comprise almost 1/4 of all sherds, being almost 1/3 of the whole ceramic assemblage in weight.

The data beyond the sample: inference on the sample population

It is sometimes recommended that more than one measure should be obtained to achieve a more satisfactory approach to the quantification of pottery (Baumhoff & Heizer 1959). It is probable that the ratio of two measures could provide information not contained in either individually. In theory, one could calculate the ratio between any two measures, but practice showed that some are used more frequently and are more revealing than others. The most frequently encountered are:

- *Average weight of a sherd (AWS)*: This is the division of sherd weights by sherd counts (weights/sherds). The first ratio proposed by Solheim (1960) aimed to derive information on the stratigraphy of two sites.

- *Brokenness*: This is estimated by the division of sherd counts by vessel equivalents (sherds/EVEs), and refers to 'the average number of sherds into which each pot in the assemblage has been broken, even though not all of those sherds form part of the assemblage' (Orton 1985: 114).
- *Completeness*: This is 'the average proportion of each vessel which is present in the assemblage' (Orton 1985:114). It is estimated by the ratio of vessel equivalents to vessels represented (EVEs/EVREPs).

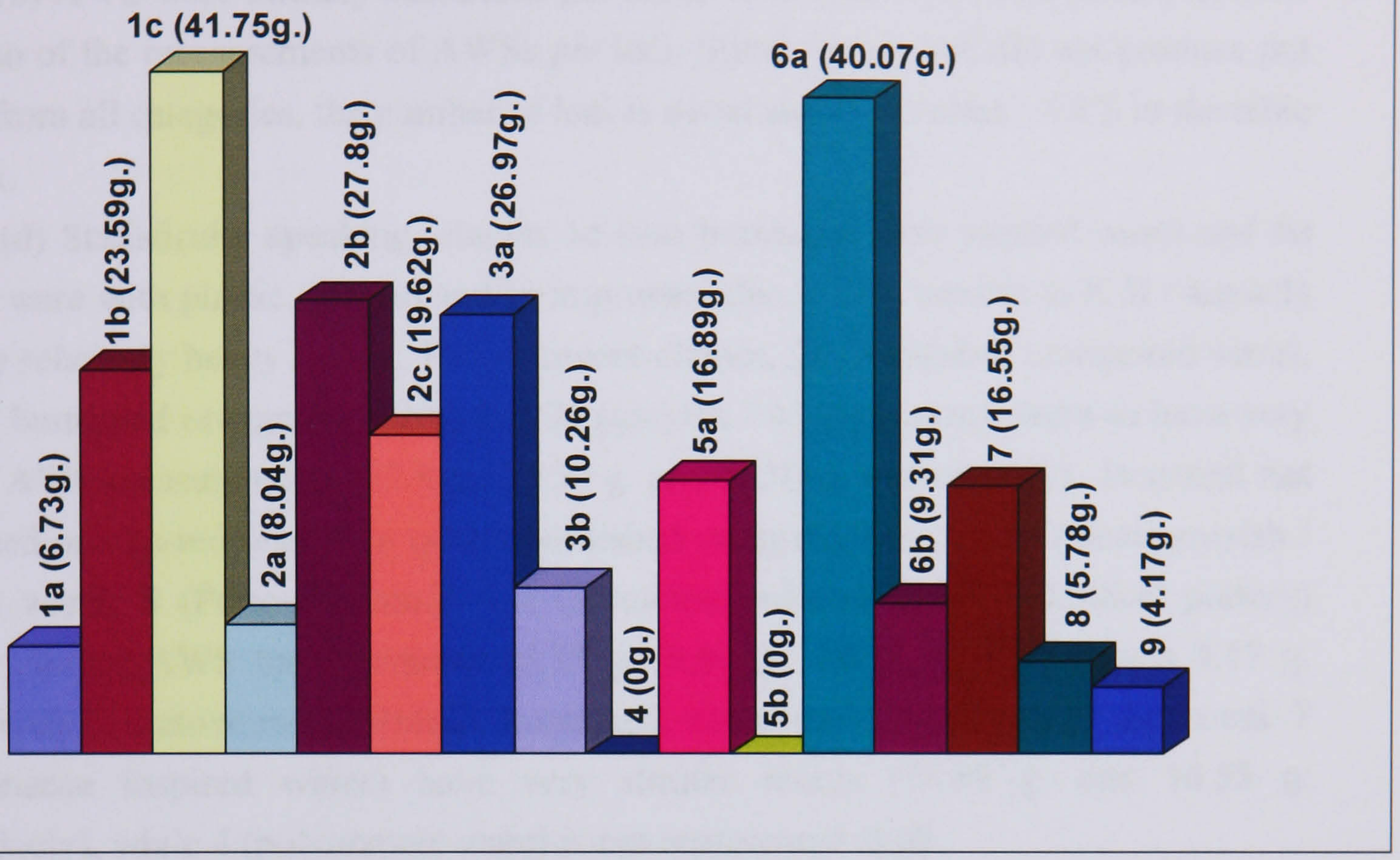
All relevant advantages and restrictions have been discussed elsewhere (see Orton 1985: 115-116 and Orton 1993a: 176 for a summary) and will not be repeated or reviewed here. The only ratio that can be calculated here is the AWS. The objective is to use it as a means to further compare the Liatovouni pottery classes, as well as to use it for achieving an insight into the out-of-sample Liatovouni pot sherds. Table 2.2.5.4k summarises the results.

Table 2.2.5.4k: Average weight of a Sherd (AWS) per Liatovouni pottery class

Pottery class	AWS non-diagnostics	AWS diagnostics	AWS from totals
1a	**6 grams** (out of 52 loci)	**9.61 grams** (out of 43 loci)	**6.73 grams** (out of 53 loci)
1b	**22.62 grams** (out of 58 loci)	**30.90 grams** (out of 45 loci)	**23.59 grams** (out of 58 loci)
1c	**0 grams** (out of 0 loci)	**41.75 grams** (out of 2 loci)	**41.75 grams** (out of 2 loci)
2a	**7.02 grams** (out of 55 loci)	**11.58 grams** (out of 47 loci)	**8.04 grams** (out of 56 loci)
2b	**26.03 grams** (out of 60 loci)	**34.74 grams** (out of 59 loci)	**27.80 grams** (out of 61 loci)
2c	**32 grams** (out of 1 locus)	**17.56 grams** (out of 5 loci)	**19.62 grams** (out of 5 loci)
3a	**26.73 grams** (out of 63 loci)	**29.78 grams** (out of 47 loci)	**26.97 grams** (out of 63 loci)
3b	**7.31 grams** (out of 50 loci)	**13.37 grams** (out of 37 loci)	**10.26 grams** (out of 55 loci)
4	**0 grams** (out of 0 loci)	**0 grams** (out of 0 loci)	**0 grams** (out of 0 loci)
5a	**25.83 grams** (out of 1 loci)	**7.95 grams** (out of 1 loci)	**16.89 grams** (out of 2 loci)
5b	**0 grams** (out of 0 loci)	**0 grams** (out of 0 loci)	**0 grams** (out of 0 loci)
6a	**0 grams** (out of 0 loci)	**40.07 grams** (out of 55 loci)	**40.07 grams** (out of 55 loci)
6b	**0 grams** (out of 0 loci)	**9.31 grams** (out of 21 loci)	**9.31 grams** (out of 21 loci)
7	**0 grams** (out of 0 loci)	**16.55 grams** (out of 47 loci)	**16.55 grams** (out of 47 loci)
8	**0 grams** (out of 0 loci)	**5.78 grams** (out of 12loci)	**5.78 grams** (out of 12 loci)
9	**0 grams** (out of 0 loci)	**4.17 grams** (out of 9 loci)	**4.17 grams** (out of 9 loci)
TOTALS	**20.92 grams**	**29.09 grams**	**22.94 grams**

Table 2.2.5.4l offers a graphical representation of AWSs based on totals of sherds per Liatovouni pottery class.

Table 2.2.5.4l:
Average weight of a Sherd (AWS) per Liatovouni pottery class: bar chart on the total of sherds



Some comments on and from the tables above:

(a) The notion of the AWS is not that far from the concept of brokenness. For the same pottery class and under the same conditions, the more the brokenness increases, the more the average weight of a sherd decreases. To use an example, if a pot weighing 200 g. breaks into 10 pieces, brokenness will be 10/1=**10** and AWS 200/10 = **20**. If the same pot had broken in 20 pieces, brokenness would have increased to 20/1=**20** and AWS would have decreased to 200/20 = **10**. Both measures in this example indicate the same thing, that in the second case the pot was damaged more severely. In an archaeological context, that could be an indication of different site formation processes and/or different depositional and post-depositional parameters. Therefore, the Liatovouni AWS measurements may help in matters relating to stratigraphy. Such an endeavour would require more data, as well as the excavation details, so that loci can be productively and significantly grouped. Such a body of data is not yet available, and therefore this must be a matter for future research (see also chapter 2.2.5.5 below).

(b) AWS, just like brokenness, depends on the fabric and form of pottery. Since more than one fabric type was excavated, AWS can be biased by differences in fabric composition. 2b sherds (burnished orange-red ware) are expected to have a higher AWS than 2a sherds (small burnished orange-red ware), due to size and wall thickness differences. The same is expected for 1b (not burnished orange-red ware) and 3a

(greyish / whitish ware) as opposed to their 'smaller' counterparts, the 1a and 3b classes. Relatively high AWS measurements may indicate fabric of better quality, as may be the case for Liatovouni 1c (not burnished matt painted ware) and Liatovouni 6a (coarse ware with plastic, incised and/or impressed decoration, similar to K II / Krya 1).

(c) AWS were initially calculated per locus. The final AWS of a pottery class is the mean of the measurements of AWSs per loci. Since certain loci did not produce pot sherds from all categories, the number of loci is noted above the class' AWS in the table 2.2.5.4k.

(d) Statistically speaking, classes 1c (not burnished matt painted ware) and 6a (coarse ware with plastic, incised and/or impressed decoration, similar to K II / Krya 1) produce relatively heavy sherds. The dominant classes, 2b (burnished orange-red ware), 1b (not burnished orange-red ware) and 3a (greyish / whitish ware), seem to have very similar AWS measurements (27.8 g., 23.59 g. and 26.97 g. respectively). 1a (small not burnished orange-red ware), 2a (small burnished orange-red ware), 3b (small greyish / whitish ware), 8 (Proto-geometric and Geometric pottery) and 9 (Classical pottery) present similar AWS measurements (6.73 g., 8.04 g., 10.26 g., 5.78 g. and 4.17 g. respectively). Liatovouni 5a (black burnished undecorated ware) and Liatovouni 7 ((Mycenaean inspired wares) have very similar scores (16.89 g. and 16.55 g. respectively), while 4 (polychrome ware) is not represented at all.

(e) AWS measurements may be used to provide a practical insight into the Liatovouni pottery sample population. Three facts need to be taken into account:

- Sherd counts have been carried out for the whole bulk of Liatovouni ceramics for every pottery class,
- Sherd weights have been taken for every pottery class for 34.55 % of the bulk of Liatovouni ceramics (sample described above in table 2.2.5.4b)
- For the rest of the bulk of Liatovouni ceramics, sherd weights have been taken not per pottery class but per locus (two measurements, one for all diagnostic sherds, one for all non-diagnostic sherds),

It may be possible that AWS measurements from the sample, provided that we accept them as significant, produce expected sherd weights per pottery class for the off-sample pottery, associated with the detailed sherd counts by a simple multiplication. Overall sherd weights taken from the off-sample pottery may serve for checking. Let us use an example:

Say that an off-sample locus has only produced **10** non-diagnostic 1a-sherds, **5** non-diagnostic 2a-sherds, **2** diagnostic 2b-sherds and **7** diagnostic 1b-sherds.

The overall sherd weight of all non-diagnostic sherds is **105** g., the overall sherd weight of all diagnostic sherds is **273** g. and the sum is **378** g.

Since Liatovouni 1a AWS non-diagnostic = **6** g., Liatovouni 2a AWS non-diagnostic = **7.02** g., Liatovouni 2b AWS diagnostic = **34.74** g. and Liatovouni 1b AWS

diagnostic = **30.90** g. (according to table 2.2.5.4k), then the locus' expected overall weight is (10 x 6) + (5 x 7.2) + (2 x 34.74) + (7 x 30.90) → 96 + 295.78 = **391.78** g.

If expected weights are associated with the true ones, then we have an error of **-9** g. for the non-diagnostics (96-105), an error of **+22.78** g. for the diagnostics, and an error of **+13.78** g. overall (391.78 – 378). The relevant percentages are **8.57 %** for the non-diagnostic sherds, **8.34 %** for the diagnostic sherds, and **3.65 % overall**.

The example above is imaginary and, of course, simplified. But it shows how AWS measurements can help us to reconstruct the off-sample group of pottery. The above process was followed for the Liatovouni off-sample ceramic assemblage for every locus, and resulted an overall average true versus expected difference of 10.77 %. This figure is mentioned here simply as indicative, but it cannot be further analysed, since it cannot be statistically significant yet, due to processes of reconsideration that have to be performed and tested by further detailed studies on the Liatovouni pottery. More tests, parameters, coefficients and data have to be added and calculated both in relation to the sample and the off-sample ceramic assemblages, so that its statistical validity can be ascertained. However, I consider it a positive starting point, until further information becomes available.

2.2.5.5. The Liatovouni Pottery Record: Additional Points (including limitations) and Conclusions

The Liatovouni pottery record consists of sixteen classes and sub-classes. Three of them dominate: the burnished orange-red domestic ware (Liatovouni 2a and 2b), the not-burnished orange-red domestic ware (Liatovouni 1a and 1b) and the greyish / whitish ware (3a). Since the Liatovouni 1b and 2b classes are very close to what has been presented above as the Orange-Red class of the Kastritsa typology (chapter 2.2.2) and the Krya 3 class of the Krya classification scheme (chapter 2.2.3), and this class has been dated by Wardle (1972: 205) and Tartaron (1996: 234) after 1000 B.C., it seems reasonable to suggest that the Liatovouni Late Prehistoric settlement can be dated then. The tiny amounts of matt painted wares (Liatovouni 1c and 2c) as well as Mycenaean inspired sherds, including kylikes (Liatovouni 7) indicate a kind of contact with Macedonia and the Mycenaean world (see chapters 2.2.1 and 2.2.2 above). Liatovouni 6a and 6b, similar to K II/III / Krya 2 & 3 wares (coarse ware with plastic, incised and/or impressed decoration, see chapter 2.2.2 above) point towards the most common wares in Epirote Late Prehistoric pottery.

All wares have been quantified to a certain extent. There is no other similarly quantified assemblage from the area so far which could be used for comparison and further statistical work. However, major archaeological projects involving Late

Prehistoric material from Epirus and the Ioannina nomos are in progress and/or will hopefully be published soon: these include the excavations at Meropi (site # 13) and Dodoni (site # 43) in the Ioannina nomos, and the excavations at Ephyra in the Preveza nomos (Papadopoulos, all reports from 1978 – 1987). The Nikopolis project in the Preveza nomos (see Wiseman & Zachos 2003 for an overview) and Tartaron's work on the Late Prehistoric Bronze Age finds of the Nikopolis Project (Tartaron in press) will hopefully initiate further systematic excavation projects. Further data will become available and it is hoped that all these and other statistics will be used for further research and better grounded inference.

Limitations of the present study are many, and, apart from statistical issues and concerns, they mostly have to do with practical and logistical obstacles. These limitations are briefly summarised below:

(a) The main limitation is lack of completion of the archaeological work at the Late Prehistoric settlement of Liatovouni. Excavation and post-excavation work had to focus upon the cemetery, so that excavation there could be completed as soon as possible, in order for archaeology there to be protected from damage by natural and environmental processes (erosion, heavy winters) and human intervention (looting).

(b) no clear-cut horizontal and vertical stratigraphy has been produced yet, and the relevant study by Dr Douzougli is still in progress, together with the complete study of shapes, decoration and function of every Liatovouni pottery class through research on the bulk of diagnostic sherds. It is expected that the complete pottery study will be conducted alongside the study of the Liatovouni settlement stratigraphy.

(c) From a practical and logistical point of view, data are not going to be easily available for some time. The Museum of Ioannina, where the greatest part of Epirus' archaeological record is kept, will be closed for reconstruction and renovation works until 2007 (Dr Eugenia Adam, personal communication). Finds have been sealed in special containers, and all relevant data will be largely inaccessible until then.

(d) Another major practical point is raised by recent plans and changes of political administrative and archaeological character, integrated into the New Archaeological Law issued by the Hellenic Ministry of Culture and the Kapodistrias Plan issued by the Hellenic Ministry of Interior (see chapter 1.5). These changes have significantly affected both political and archaeological administration and authorities in Greece, especially in the areas of Greece's national borders, such as the Ioannina nomos and especially the Konitsa district, in which Liatovouni is located (site # 6, pl. 12, map

1). It will take some time for the granting of permits and guarantees to become again a straightforward process.

(e) In terms of the pottery itself, there is a difference of millimetres between the Liatovouni 1a and 1b classes, and between the Liatovouni 2a and 2b classes. 1a and 2a have vessels with a wall thickness of 1-8 mm, while 1b and 2b have vessels with a wall thickness of 12+ - +23 mm. No sherds have been found with wall thicknesses in between.

(f) Certain class possess sherds with slip. Since post-depositional processes may have resulted in the loss of a slip, there is a chance that certain sherds may have been misclassified. The same may be valid for burnished sherds, especially for small worn sherds.

(g) Some sherds have been classified as undecorated, but it may be the case that they are just the undecorated part of a decorated vessel.

(h) Counts of sherds were taken by the use of surface survey 'clicking/counting devices', and were all double checked. Weights of sherds were taken by the use of 0 – 5 kilograms electronic scale, with accuracy up to 1 gram, and were also double checked. The time spent for checking aimed to reduce error, but possibility for the existence of possible unspotted errors cannot be completely excluded.

(i) Further statistical research needs to be carried out on diagnostic sherds, involving rim and base diameters, handles as vessel representatives, and decoration frequencies.

(j) Even though efforts to collect all sherds were made, there is still a likelihood that there were more to be found than the totals indicate.

Last but not least, I have no illusions about the fact that ancient events and behaviour do not necessarily produce broken sherds, and that past processes cannot always be detected just from counts and weights of sherds. However I believe that quantification processes may serve as another tool, for the kinds of purposes outlined in the introduction.

2.3. Towards a New Typology – the Epirus Typology

The brief presentation of the pottery classification schemes, as well as the discussion of the quantification data from the recent Liatovouni works offered above, indicate that there is some common ground and overlap. For example, Krya 1 is similar to K II, which is similar to Liatovouni 6 - all of these classes describing coarse handmade local pottery with plain surfaces occasionally decorated with plastic cordons and pellets. This pottery appears at many sites in the Ioannina nomos and elsewhere in Epirus.

In this chapter, I am offering a merged version of the above pottery classification schemata. Based upon the categories from all classification schemes mentioned above, I have drawn up a scheme to encompass and in due course to replace the above systems. The proposed scheme works well with the Liatovouni pottery presented in chapters 2.2.5.3 and 2.2.5.4 and conforms well to Tartaron's analysis of the prehistory of the Preveza nomos as part of the Nikopolis project (Tartaron 1996: 244 for a summary of the Nikopolis project prehistoric pottery record). The new typology consists of six classes, named Epirus 1a, 1b, 1c, 2, 3 and 4:

Epirus 1a: Coarse pottery, which is expected to encompass almost the whole of K II and Krya 1, the coarse versions of K III and Krya 2, and Liatovouni 6a.

Epirus 1b: Semi-coarse pottery, which is expected to encompass almost the whole of K III and Krya 2, the semi-coarse versions of K II and Krya 1, and Liatovouni 6b.

Epirus 1c: Minyan inspired pottery, which is expected to encompass the K II/III Minyan subset, Liatovouni 5a, and Liatovouni 5b.

Epirus 2: 'Matt-painted' pottery, which is expected to encompass K IVa, Krya 1c, and Liatovouni 2c.

Epirus 3: 'Orange-Red' pottery, which is expected to encompass the 'Orange-Red' ware, Krya, Liatovouni 1a, Liatovouni 1b, Liatovouni 2a, and Liatovouni 2b.

Epirus 4: Mycenaean inspired pottery, which is expected to encompass Liatovouni 7 and all Mycenaean and imitation Mycenaean wares.

Other classes, such as Liatovouni 3a and Liatovouni 3b (greyish / whitish wares) and Liatovouni 4 (polychrome ware), may occasionally appear, but they are expected to be in small proportions.

Epirus 1a, 1b and 1c represent the major part of the purely local Late Prehistoric pottery, as opposed to the Epirus 2, 3 and 4 classes, which comprise the record of Late

Prehistoric pottery in the Ioannina nomos and Epirus as a whole, which is mainly influenced from elsewhere. Epirus 1a, 1b and 1c may be seen as one class with three subsets, with Epirus 1a being the dominant subset.

The pottery record of the Late Prehistoric Ioannina nomos and of Epirus as a whole does not exhibit impressive stylistic, decorative and technological characteristics and skills. Compared with the pottery of southern Greece, it is justifiable to assume a lower technological level in pottery production. On the other hand, it must be stressed that clay may not have been the key material in Epirote technology. Wood, wool, textiles and leather may well have served this role, limiting pottery's role to pure utilitarian functions, mainly cooking and heating, and to a lesser extent eating and drinking. This idea is possibly supported by the facts that fine wares are almost absent, the use of the wheel for pottery production is nonexistent, and handmade coarse to semi-coarse wares of everyday utilitarian function dominate. Further evidence is necessary to confirm such a hypothesis.

The Epirus wares are presented below in terms of use and function, shapes and decoration, fabric and manufacturing process, distribution, and chronology / influences. In approaching the classes below, I have used the works and observations of Wardle 1972: 193-229, Papadopoulos 1976: 279-285, Wardle 1977: 162-190, Tartaron 1996: 189- 284, Soueref 2001: 79-91, as well as personal research and observations in the storage rooms of the Ioannina museum on pottery from all 62 Late Prehistoric sites in the Ioannina nomos (see Gazetteer, chapter 3.2.3.3C) as well as from Ephyra in the Preveza nomos (Papadopoulos, all reports from 1978 – 1987).

My main aim is to produce comprehensive pottery types, even though these cannot be exhaustive, and to offer a first step towards an overall typology for the Late Prehistory of the Ioannina nomos and hopefully for Late Prehistoric Epirus as an archaeological unit. Exhaustive accounts require further analytical ceramic-oriented research, and this is currently being undertaken by others. It is accepted that individual pottery assemblages from different sites may present characteristics that deviate from, and/or add to, the pottery types described below, but they are not expected to produce significant changes to the proposed classification scheme. Needless to say, it is hoped that new finds and further archaeological research will enhance the number of classes for every pottery type, expand the existing classes and sub-classes, and even add more and/or better structured and informative ways of classification and approach. Other aims of the proposed scheme address research, presentation and archaeological training purposes and objectives.

2.3.1. Epirus 1a: Handmade Local Coarse Ware (see also chapter 2.4.4, table 2.4.4a)

Summary, Use and Function: This class consists of crude coarse wares serving utilitarian everyday needs and routines. Epirus 1a covers almost the whole of K II and Krya 1, the coarse versions of K III and Krya 2, and Liatovouni 6a. In my view, Epirus 1a pottery would mainly serve for cooking, and only partly for food and drink storage and consumption. Cooking could only be done in clay pots (metal cooking pots is another option, but there is no relevant evidence), while food and drink preparation and storage could be achieved using containers in other materials, such as wood, cane, skin and textiles, which are more compact, lasting, not as breakable as pottery, but perishable (Wardle 1993: 124). Epirus 1a comes in open shapes, i.e. medium to large bowls and jars; it was most probably produced in poorly controlled open firings; its fabric is rudimentarily processed and its decoration consists of plain surfaces with plastic cordons and pellets; it is attested almost exclusively in Epirus and at 76% of the Ioannina nomos Late Prehistoric sites / findspots (see chapter 3.2.3.3C).

Appearance, Shapes and Decoration: Epirus 1a comes in the form of body sherds and rarely in whole pots. It is handmade, with thick walls in a friable and soft state, with reddish-brownish to grey surfaces and dark 'sandwich effect' cores. The quality of fabric is coarse, heavy and crude, made of unrefined clay full of numerous inclusions. The average sherd would present no surface treatment, such as slip, burnishing or paint. Some, but not many sherds, would demonstrate plastic decorative motives.

In terms of shapes, whole pots have been discovered in the average form of open *pithoid jars* (with vertical handles and outward everted rims) and *large conical bowls* (with loop handles close to the rim) (Wardle 1977: 183-184, fig 11). Sherds would be mainly body sherds; vertical, horizontal and wishbone handles; everted rims; very few lugs of different shapes / types (Hammond 1967: 300); few flat and/or slightly rounded bases. According to Wardle's statistics for the pottery from the 1967-1969 excavations at Dodoni (site # 43, Wardle 1972: 196, 218, fig. 15-16), body sherds dominate (about 50%) and decorated sherds reach 13%.

Various sherd types may indicate various chronological contexts. An example of a possible chronological difference is indicated by wishbone handles, which were found by Evangelidis (1935) in Dodoni (site # 43), but were absent from the 1967-1969 assemblage studied by Wardle (1972). Nevertheless, chronological conclusions based

on earlier and later appearances of certain types of sherds and/or pots must remain speculative until further research is conducted.

In terms of decoration, Epirus 1a pots present impressed, incised and plastic applied motifs in the form of horizontal and vertical bands and cordons. These bands are plain, incised possibly by fingernail or a pointy tool, and/or impressed by the tip of a finger or an oval / circular tool. Applied pellets and disks are not uncommon.

Taking into account that fabric was rudimentarily prepared and that all these motifs were applied on surfaces that had received no burnishing, slip and or paint, one may wonder to what extent these decorative motifs were 'decorative' as such. Tartaron (1996: 192) supports a more decorative than structural purpose for the applied clay bands, without excluding structural purposes involved in the process of pottery production. In my view, without rejecting the decorative aspect, these plastic bands and other motifs would probably serve structural purposes rather than decorative. The friable state of big, ill-fired pots, as well as the pot's intended utilitarian purpose for everyday cooking and/or food storage and preparation, would not permit the production of pots with thicker walls, since these walls would be even more friable. Horizontal and vertical clay bands, as well as random, denser or less dense, pellets, would strengthen more fragile parts (such as the rim); they would offer a better overall structure and durability; they would produce thinner walling and lighter vessels; and they would add some easily yielded aesthetic value, which is of course not underestimated.

Fabric and Manufacturing Process: Processes of pottery production, fabric forming, and vessel firing, need to be addressed through research involving valid sampling and microscopic, petrographic and other analyses.

With regards to fabric, observation by the unaided eye indicates coarse, heavy fabric, unrefined, with numerous inclusions (rock fragments and mineral particles) for strengthening, often visible in the surface as well as in sections. Firing was poor and incomplete, most probably in open kilns and in uncontrolled temperatures, resulting in a variety of surface colours (reddish / brownish to dark grey) and a 'sandwich dark effect' in the cores. The drying pre-firing stage, the nature and quality of fuel used for firing and post-depositional issues may also affect the present state and colour(s) of a pot or a sherd (Orton et al. 1993: 223; Wardle 1972: 208-209; Tartaron 1996: 251-252).

Chronology, Distribution (Ioannina nomos and elsewhere) and Influences: Epirus 1a is widely distributed. No straightforward clear-cut stratigraphic sequences are

yet available to sustain a valid chronological system. Secure absolute dating still remains fluid until further studies and work provide data and answers. Epirus 1a (K II) from Kastritsa has initially been given an Early Bronze Age start date (Dakaris 1952: 369; Papadopoulos 1976: 281-282, 318). Hammond (1967: 304-307) suggests a start date of around 2000 B.C. Some basis for relative chronology can be gained by the fact that Epirus 1a appears with objects of Mycenaean date, such as pottery (see Mazaraki, site # 60) and bronze artefacts (see Kalpaki, site # 22; Elaphotopos, site # 19), therefore a Late Bronze Age date appears secure. With regard to a relative terminus postquem, we know that the pottery record from the site of Doliana (Douzougli & Zachos 1994: 14-17; Douzougli & Zachos 2002: 124-143; Tartaron 1996: 204) may provide some association with the earliest appearance of Epirus 1a. Tartaron (1996: 204-207) has convincingly shown that pottery from the site of Doliana, which comes from a context with four calibrated radiocarbon dates extending from 3600 – 3100 B.C., presents both similarities as well as significant differences from Epirus 1a pottery. Further research will show conclusively if Epirus 1a was initiated roughly then. A potential terminus antequem is provided by the fact that Epirus 1a does not appear in the earliest burials (9th century B.C.) at Vitsa (Vokotopoulou 1986: 225-226; Tartaron & Zachos 1999: 70). In summary, I consider the Epirus 1a class as the material characterising the Late Prehistoric phase of the Ioannina nomos and Epirus as a whole, spanning roughly the period from Early post-Doliana to Late pre-Vitsa, with emphasis on the period corresponding to Late Mycenaean in southern and central Greece.

Epirus 1a is widely distributed all over the Ioannina nomos in 47 of 62 sites (site # 1-11, 13, 16, 18-19, 22-23, 25-41, 43, 44,46-48, 51, 53-57, 60, 62). Outside the nomos, Epirus 1a has been reported in 93 sites in total: 42 sites in the nomoi of Thesprotia, Arta and Preveza, plus 36 Nikopolis Project findspots in the Preveza nomos (Tartaron 1996: 242-284). Therefore, Epirus 1a has been noted in 125 locations all over Epirus (see table 2.4.3a for site names and/or references, as well as chapter 3.2.3.3C for relevant statistics in relation to other pottery classes).

Influences and/or mere similarities may arise from, and/or appear in, different places. Pottery of similar coarse fabrics with plastic decoration comes from a number of Neolithic and Bronze sites: eastern Italy and central Europe (Vokotopoulou 1969b: 190); Albania, especially Velcë and Maliq III (Hammond 1967: 292, 303); Macedonia and Thessaly (Hammond 1967: 299-307); Ionian islands (Souyoudzoglou – Haywood 1999:11), especially Ithaka (Wardle 1977: 187), Kephallenia, Lefkas and the 'Red Ware' of Kerkyra (Sordinas 1969). In central Greece, similar decoration has been noted

in the Chalcolithic Attic-Kephala culture, and in the middle and upper levels of the Chalcolithic Rachmani phase at Pefkakia (Douzougli and Zachos 2002: 127); parallels for impressed band decoration may also be found in Early Helladic contexts from the southern Argolid and Lerna (Tartaron in press, ch. 5).

2.3.2. Epirus 1b: Handmade Local Semi-coarse Ware (see also chapter 2.4.4, table 2.4.4b)

Summary, Use and Function: Epirus 1b is seen as the fine ware of the overall Epirus 1 class with its 1a, 1b and 1c subsets (see also Wardle's K II/III class presented in chapter 2.2.2). Epirus 1b comes in fabrics very similar to Epirus 1a and is a semi-coarse version of Epirus 1a. Epirus 1b covers almost the whole of K III and Krya 2, the semi-coarse versions of K II and Krya 1, and Liatovouni 6b. Epirus 1b vessels, compared to Epirus 1a, have thinner walls, are better fired and more elaborated; shapes are smaller and finer that Epirus 1a shapes, and they point towards possible uses for eating and drinking. Epirus 1b is the 'table ware' of Tartaron's KII/III class (Tartaron 1996: 209). I would take off the word 'table' and propose the term 'general domestic' or 'drinking / eating ware', focusing on food serving and consumption and excluding furniture oriented implications, mainly due to the presence of both flat and rounded bases in Epirus 1b pots. Epirus 1b is a small class of pottery and always connected to Epirus 1a, since Epirus 1b sherds are always found with Epirus 1a sherds, and never on their own.

Epirus 1b indicates that the knowledge, skill and technology for making finer pots was there, and one may wonder why they were not applied for the production of better quality Epirus 1a vessels. Tartaron attempts to answer this question in terms of the intended functioning of his classes that are here presented as Epirus 1a and 1b: Epirus 1a vessels would be used for cooking, therefore a higher permeability would be desirable; while Epirus 1b 'table ware' pots would be used for eating, drinking and possibly storing, therefore a low permeability would be sought by the pot-makers (Tartaron 1996: 210-211). The issue of thermal tolerance and its variability and measurement in the context of pottery classes is raised here. Adding to Tartaron's argument, I would not overrule the possibility that Epirus 1b vessels were seen as elite objects, a notion that needs to be considered within the cultural context of Late Prehistoric Epirote standards and processes. Epirus 1b would require extra care and effort to be produced; vessels could be easily transported and could probably form an appreciated gift. Epirus 1b vessels may have been handmade local pottery elite vessels

to be used for special circumstances alongside Mycenaean-inspired kylikes (Epirus 4), 'matt-painted' cups (Epirus 3) and Minyan-inspired bowls (Epirus 1c); wider sample of contexts would certainly be necessary for this assumption to be confirmed. Everyday routine eating and drinking activities would not necessarily require separate vessels such as plates and/or cups; Epirus 1b vessels may have served as multi-purpose vessels for everyday needs (see also the case of 'teacups' as multi-purpose vessels at the later assemblage at Isthmia as proposed by Morgan 1999: 322-323). In cases where plates, bowls and cups would be required, they could have been made of another material, less friable than baked clay, such as wood. Such a hypothesis may be supported by the very low frequencies of the better-quality Epirus 1b class in relation to coarser, more fragile Epirus 1a vessels (see also comments on chronology just below). Needless to say, the above hypothesis remains to be confirmed by future data, research and results.

Appearance, Shapes and Decoration: In terms of appearance, Epirus 1b comes in the form of body sherds and rarely in whole pots. It is handmade, with relatively thin walls, uniformly and thoroughly fired, with dark brownish to black surfaces and cores. The quality of fabric can be considered semi-coarse and harder than that of Epirus 1a. Epirus 1b vessels are from refined clay without coarse inclusions. The average sherd would have a smoothed and occasionally burnished surface, while some vessels preserve a slip of purified clay. No evidence of paint is yet available, and some vessels demonstrate plastic decorative motives similar to Epirus 1a.

In terms of shapes, Epirus 1b are on average smaller that Epirus 1a vessels: whole pots have been discovered in the average form of *cups* (with one or two handles), *bowls* (conical and hemispherical) and *dippers* (Tartaron 1996: 208). Finer *deep bowls* and smaller *jars* may fall into Epirus 1b as well. Sherds would be mainly body sherds. Handles would almost exclusively be vertical, often including a vertical strap or ribbon. Lugs, without being very common, often replace handles and may be vertically pierced or hollowed. Rims are mainly everted or vertical. Bases are flat or rounded (Wardle 1977: 129).

As regards decoration, Epirus 1b illustrates impressed, incised and plastic applied decorative motifs, similar to Epirus 1a presented above, but a bit more elaborated.

Fabric and Manufacturing Process: Epirus 1b is of fabrics similar to Epirus 1a, but it is characterised by a finer clay body, with fewer and smaller inclusions, greater

care in surface treatment, and a harder, more completely fired fabric. Greater effort, work and care must have been required for the production of the Epirus 1b eating/drinking/elite ware. Finer clays, possibly from different clay sources, may have been specially selected as more suitable to the manufacture of Epirus 1b vessels. Greater effort must have been put in clay preparation; the raw clay was more carefully refined to remove large inclusions; although some sherds sometimes have a black inner core, the thinness of the walls permitted more complete firing and a harder fabric. Petrographic analysis and comparative studies will provide further insights.

Chronology, Distribution (Ioannina nomos and elsewhere) and Influences: Since Epirus 1b (K II) is never found without Epirus 1a (K III), but the opposite is not valid, Dakaris and Hammond considered Epirus 1b a later development of Epirus 1a (Dakaris 1952: 270-273; Hammond 1967: 308-309). Without excluding this chronological aspect, I tend to support the aforementioned 'elite-object' view, rather than the chronological trend. I expect Epirus 1a pottery, as cooking ware, to have been present in practically all Late Prehistoric households, while Epirus 1b, as 'elite-object' ware, to be much less frequent. Taking as the start point of the Late Prehistory of the Ioannina nomos (and possibly of Epirus as a whole) the conventional end of the Doliana culture, I accept that Epirus 1b may have appeared at an advanced, but not much later, stage, following the progress and developments of Epirus 1a pottery-making techniques and applications. If the 'elite-object' view is accepted, I would argue for the possibility that in the earlier stages of pottery making techniques, Epirus 1a and 1b pottery of lower quality was produced. To take the argument further, there might be an element of chronological sequence in the quality of Epirus 1a and 1b sets discovered: better made versions may be considered later than worse made versions, while earlier and worse made versions may have been less viable in certain post-depositional situations. The discovery and study of stratigraphical contexts in the future will provide appropriate data, confirmations, rejections and answers.

Epirus 1b is not as widely distributed as Epirus 1a, but it is present at most excavated sites that produced local handmade wares in the Ioannina nomos: Liatovouni (site # 6), Meropi (site # 13), Elaphotopos (site # 19), Kastritsa (site # 29), Krya (site # 31), Koutselio (site # 32), Neochoropoulo (site # 34), Dodoni (site # 43), and Mazaraki (site # 60). Outside the Ioannina nomos, Epirus 1b has been found at the Nekyomanteion (Dakaris 1975a; Dakaris 1976a; Dakaris 1977a), Ephyra (Papadopoulos, all reports from 1978 – 1987), and Kiperi (Papadopoulos 1981b). In

Tartaron's analysis of the Nikopolis Project Late Prehistoric findspots, Epirus 1b appears together with Epirus 1a as the K II/III class (Tartaron 1996: 242-284).

For influences and similarities, see both Epirus 1a (chapter 2.3.1) and Epirus 1c (chapter 2.3.3).

2.3.3. Epirus 1c: Handmade Local Minyan-inspired Ware (see also chapter 2.4.4, table 2.4.4c)

Summary, Use and Function: Epirus 1c pottery is seen within the Epirus 1b spectrum. Epirus 1c is actually Epirus 1b pottery, imitating Minyan vessels in terms of shapes (kantharoi, small jugs and cups) and appearance (very dark well-smoothed surfaces, finer fabric). Use and function are similar to Epirus 1b. Epirus 1c pottery encompasses the K II/III Minyan subset, Liatovouni 5a, and Liatovouni 5b.

Appearance, Shapes and Decoration: In terms of appearance, Epirus 1b comes in the form of body sherds and rarely in whole pots. It is handmade, with thin walls, uniformly and thoroughly fired, with dark brown to black surfaces and cores. Refined clay with very few inclusions produces fabric of good fine quality, as compared to Epirus 1a and 1b classes. The average sherd would have a much smoothed and occasionally burnished surface.

In terms of shapes, Epirus 1c follows the Minyan repertoire: whole pots have been discovered in the average form of *kantharoi* (with one or two handles), *cups*, *small jugs* and *dippers*. Finer *deep bowls* and smaller *jars* may fall into Epirus 1c as well. Sherds would be mainly body sherds. Handles would almost exclusively be vertical. Rims are mainly everted or vertical. Bases are flat or rounded (Wardle 1977: 129).

Fabric and Manufacturing Process: Epirus 1c is of fabrics similar to Epirus 1b. Clays must have been more carefully chosen and refined, while the process of manufacture must have been more elaborate, in order to produce fine well-fired vessels, the surfaces of which bear a resemblance to Minyan pottery.

Chronology, Distribution (Ioannina nomos and elsewhere) and Influences: In the Ioannina nomos, Epirus 1c Minyan inspired pottery appears at Liatovouni (site # 6), Meropi (site # 13), Elaphotopos (site # 19), Kastritsa (site # 29), Krya (site # 31), Koutselio (site # 32), Neochoropoulo (site # 34), Dodoni (site # 43), and Mazaraki (site

60). Outside the Ioannina nomos, it has been found at the Nekyomanteion (Dakaris 1975a; Dakaris 1976a; Dakaris 1977a), Ephyra (Papadopoulos, all reports from 1978 – 1987), and Kiperi (Papadopoulos 1981b). In Tartaron's analysis of the Nikopolis Project, Epirus 1c appears as the 'K III pseudo-Minyan' class at eight new findspots (Galatas, Kastritza, Koulia Grove, Pountas East, Skaphidaki, Spilaion, Vouvopotamos, and Xilorofos 2), forming 2.5 % of the Late Prehistoric sherds of the Nikopolis Project assemblage (Tartaron 1996: 244, 267-269).

Given the Minyan character of Epirus 1c pottery, an introduction at some point in the second millennium B.C. can be assumed. Tartaron proposed a possible beginning around the Shaft Grave era of Southern Greece (ca. 1750 – 1600 B.C., Rutter 1993: table 2), based upon finds from the Skaphidaki findspot in the Preveza nomos. Two complete spherical bowls (Epirus 1c) and two bronze pins were found in a grave at Skaphidaki (Andreou Ioanna, 1987: 319). The grave was attached to a stratified occupation sequence in a road cutting noted and investigated by the Nikopolis Project teams; it produced Epirus 1b (K III) sherds from its earliest occupational stratum. A sample taken from a shell layer just beneath that stratum returned a calibrated date of ca. 1710 B.C. (Tartaron 1996: 161-164). Epirus 1c seems to continue throughout the Late Prehistory of Epirus. Its shapes persisted in the Early Iron Age, even as fabrics changed, as it is evident from the kantharoi found in the Vitsa cemetery (Vokotopoulou 1986: 234-236).

The origins of, and influences that led to, Epirus 1c pottery have been attributed to direct and/or indirect contacts with southern Greece. Dakaris saw this pottery as the product of the first 'Greek' tribes arriving in Epirus towards the end of the Early Bronze Age, while Hammond proposed a slightly later arrival in the Middle Helladic period, resulting from the spread of dark-surfaced and Minyan prototypes first to the Ionian Islands and later to Epirus (Dakaris 1952; Hammond 1967: 309). Tartaron favours Southern Albania as the main source of influence (Tartaron in press, chapter 5). It is true that regions surrounding Epirus, including Albania (Prendi 1982; Bejko 1994; Prendi 2002: 88-93), Macedonia (Hammond 1972: 277-290; Andreou et al. 1996, Kyriazi et al. 1997), Aetoloakarnania (Wardle 1972: figs. 51, 52, 55:182, 68:248), and the Ionian Islands (Souyoudzoglou-Haywood 1999: 102), had strong connections to the Middle Helladic traditions of the Aegean, primarily shown by the adoption and development of both bronze implements (swords, spear-heads, jewellery) and pottery that imitated the Minyan ware of southern and central Greece (for an up-to-date account of Aegean influences in Albania and the Ionian Islands in the Middle Bronze Age, see

Tartaron in press, chapter 5). The Adriatic region, Southern Italy. and the Urnfield culture of the middle Danube of the later 13th and 12th centuries B.C., have also been proposed as other possible sources of influence (Vokotopoulou 1969b: 184). My view is that, given that the spread of Minyan pottery of central and southern Greek origin was wide, influences may have come to Epirus from more that one metropolitan and/or provincial centres.

Epirus 1c vessels must have been seen as 'elite' objects, given their elaborated manufacture and their resemblance to Minyan and metal vessels (see also chapter 2.3.2).

2.3.4. Epirus 2: 'Matt-painted' Pottery (see also chapter 2.4.4, table 2.4.4d)

Summary, Use and Function: Epirus 2 'matt-painted' pottery is expected to encompass K IVa, Krya 1c, and Liatovouni 2c. It comes in small thin-walled vessel, decorated with geometric motifs of matt dark paint. It is a ware of Macedonian origin that spread into Epirus just before the Early Iron Age, together with ideas and techniques that produced, among other developments, the Epirus 3 'orange-red' pottery class discussed below (chapter 2.3.5).

Appearance, Shapes and Decoration: Epirus 2 appears in small to medium sized vessels, with dark on light matt painted decoration. Surfaces are orange to red, smoothed, and usually without a slip. Shapes consist of *bowls* (small, deep, with vertical handles), deep *kylikes* (deep, high, with cylindrical stem, and ring base), *cutaway-neck jugs*, *tankards* (small), and *amphorae* (Hammond 1967: fig.10; Dakaris 1952: 373-374; Soueref 2001: 81). Decoration consists of painted geometric designs and motifs, in matt dark brown to black paint: zigzag lines, painted and hatched triangles, checkerboard patterns, S-shapes, and horizontal bands (Dakaris 1951: 180–181, fig. 6; Hammond 1967: 292; Tartaron in press: fig. 5.7).

Fabric and Manufacturing Process: Epirus 2 is mostly handmade, orange to red in colour, formed from well refined clay. It is generally well fired, with hard fabrics sometimes with a grey layer in the core. It is associated with the Epirus 3 'Orange-Red class' presented below (chapter 2.3.5).

Chronology, Distribution (Ioannina nomos and elsewhere) and Influences: Epirus 2 is related to the general class of pottery first found and identified at Boubousti in western Macedonia (Heurtley 1926/1927), known as 'Northwestern matt-painted'.

'Macedonian matt-painted', or 'Boubousti' ware. Dakaris classified it as K IVa, the first of the two variants, K IVa and K IVb, to which his K IV class was divided (Dakaris 1952). While K IVb is dated to the Iron Age (Dakaris 1952; Vokotopoulou 1986), K IVa, or Epirus 2, was dated to the end of the Late Prehistory.

Several sites in the Ioannina nomos have produced sherds and vessels of Epirus 2: Meropi (site # 13), Kato Pedina (site # 23), Kastritsa (site # 29), Krya (site # 31), Koutselio (site # 32), Dodoni (site # 43), and the Early Iron Age cemetery at Vitsa (Vokotopoulou 1986; Tartaron in press: fig. 5.6). In the Preveza nomos findspots from the Nikopolis Project, Epirus 2 has been considered as part of the same class as Epirus 3 (the Orange-Red class presented below in chapter 2.3.5, and this class appears in eight locations (Ephyra-Nekyomanteion, Kastriza, Kiperi, Pountas, Pountas East, Skaphidaki, Vouvopotamos, Xilorofos 2, see Tartaron 1996: 242-284).

Outside Epirus, this pottery is known, apart from Epirus, from Macedonia (e.g. from Aiani, Boubousti, Pateli, Vardaroftsa, Kastanas, Assiros, Archondico, Angelochori), Thessaly (Trikala), Aetoloakarnania (Thermo), and elsewhere in Greece (Lianokladi Lamias, Ionian Islands, Olympia), as well as from southern Albania, FYROM, and Bulgaria (Vokotopoulou 1969b; Wardle 1972: 200-202, figs. 125-126; Wardle 1980; Hochstetter 1982; Vokotopoulou 1986: 364; Karamitrou-Mentesidi 1989:71; Wardle 1993; Stefani & Meroussis 1997; Soueref 2001: 81, note 7). Western Macedonia and southeastern Albania may be considered as strong candidates for the point of origin given the number of findspots they have produced. This argument is further supported by Tartaron (in press, chapter 5, fig. 5.8), who stresses that the Korçe plain in Southern Albania is connected to Boubousti in Macedonia through an easily negotiable east-west passage, and convincingly argues for a Boubousti – Korçe Plain – Ioannina nomos route of influences at the end of the late Bronze Age and in the Early Iron Age. It would not be groundless to argue that new advanced pottery techniques must have reached Epirus accompanied by other material and technological imports, even by potters migrating to Epirus to begin producing their wares there, in similar ways that Greek potters migrated to Italy in the Late Geometric period (Papadopoulos, J.K., 1997: 455). The later argument rests upon the idea that techniques are not imitated, but need people to exercise and most probably teach them.

2.3.5. Epirus 3: 'Orange-Red' Pottery (see also chapter 2.4.4, table 2.4.4e)

Summary, Use and Function: Epirus 3 encompasses the 'Orange-Red' ware. Krya, Liatovouni 1a, Liatovouni 1b, Liatovouni 2a, and Liatovouni 2b. It was first noted

by Wardle (1972: 194-195, 204-206, 490) in his study of prehistoric pottery from Dodoni (site # 43), as the second major group of pottery (the first being the K II/III (Epirus 1a,b,c) ware), forming 16% of the assemblage. This class was termed orange-red 'for convenience, from their distinctive colour' (Wardle 1972: 194). It has been proposed that it was the replacement for the Epirus 1a, 1b and 1c classes, and has been given a chronology in the later phases of the Late Prehistory and into the Early Iron Age (Tartaron in press, chapter 5).

Appearance, Shapes and Decoration: Epirus 3 is handmade, of local manufacture, with smoothed orange to red surfaces. Not many shapes are known from Late Prehistoric contexts: *globular jars*, *handless small bowls*, and *deeper bowls* (some conical, with vertical handles and/or flat bases). For detailed descriptions see Wardle 1972: 204-206, fig 126). In the Early Iron Age cemetery at Vitsa, more shapes of Epirus 3 have been noted, namely bowls of different types and amphorae with up to four handles. No decorative motifs are common, with just incised dots, slashes and one case of impressed cordon noted (Wardle 1972: 205).

Fabric and Manufacturing Process: Epirus 3 is a handmade ware, made from well prepared clay with almost no inclusions. Surfaces are orange to red. Fabrics are hard, and very well fired; sometimes a core of blue-grey colour is left. Wardle points out similarities with fabrics of Classical and Hellenistic periods, and suggests that Orange-Red wares were in built kilns unlike the Epirus 1 classes, which were probably fired in open kilns (Wardle 1972: 204). A kiln was noted by Dakaris at Dodoni (site # 43, Dakaris 1967a), but it is not clear that it served this particular purpose.

Chronology, Distribution (Ioannina nomos and elsewhere) and Influences: In the Ioannina nomos, Epirus 3 pottery appears at Liatovouni (site # 6), Meropi (site # 13), Elaphotopos (site # 19), Kastritsa (site # 29), Krya (site # 31), Dodoni (site # 43), and in the Early Iron Age cemetery at Vitsa (Vokotopoulou 1986). It is the second major group of pottery in Dodoni, forming 16% of the assemblage in Wardle's study (see above). Outside Ioannina nomos, Epirus 3 appears at Ephyra; Tartaron (in press, chapter 5), in an informal survey of 43 randomly chosen excavated contexts (overall about 400 sherds), found this ware to comprise approximately 5% of the total of sherds studied. In the Preveza nomos, Epirus 3 has been considered one class with Epirus 2 (see above), and appears in eight new locations (Tartaron 1996: 242-284).

Epirus 3 seems to have begun very late at the end of the Late Bronze Age and flourished in the Early Iron Age: Wardle's suggested date of 1000 B.C. (Wardle 1972: 206) still seems plausible. Epirus 3 is connected to similarly coloured pottery from Macedonia (Vergina, Kozani, Aiani, see Wardle 1972: 206), which flourished in the Early Iron Age, and to the 'matt-painted' pottery of Macedonian origin (Epirus 2. chapter 2.3.4). It is therefore reasonable to assume that Epirus 3 and Epirus 2 together comprise the last Late Prehistoric wares, confirming contacts with Macedonia and marking the transition to the Early Iron Age in Epirus. Together with the advances in pottery manufacturing techniques, it is probable that new technology, ideas and ways of life were introduced in Epirus from elsewhere.

2.3.6. Epirus 4: Mycenaean-inspired Pottery (see also chapter 2.4.4, table 2.4.4f)

Summary, Use and Function: Epirus 4 encompasses Liatovouni 7 and all Mycenaean and imitation Mycenaean wares; it can be of either local manufacture or imported from provincial Mycenaean centres (such as Aetoloakarnania or the Ionian Islands) peripheral to the Mycenaean heartlands of Southern and Central Greece. Imported pots are much more than local imitations, although it is possible that many sherds from imitation vessels have gone unrecognized as a consequence of their resemblance to local fabrics (Soueref 2001: 87).

Mycenaean pots, when present in Epirote Late Prehistoric ceramic assemblages, form small proportions. They were probably most abundant along the more 'Mycenaeanised' shores of western Epirus, on a presumed Adriatic route with Mycenaean emporia (Papadopoulos 1987e; Tsonos 2000; Soueref 2001: 142-147), manifested in Epirus by the fortified settlement at Ephyra (Papadopoulos, all reports from 1978 – 1987) and the tholos tomb at Kiperi (Papadopoulos 1981b). At Dodoni (site # 43) Mycenaean pottery comprises 5% of a Late Prehistoric deposit from the sanctuary area (Wardle 1972: 197–198), while at Ephyra the analogous percentage has been estimated as 8 – 15% (Kilian 1986: 284, note. 28; Tartaron in press: chapter 5).

Epirus 4 comes in various open and closed shapes, with the kylix being the most common. Potential uses included eating, drinking, storing precious commodities, conspicuous consumption and display. Epirus 4 pots are seen as objects of elite character. The Mycenaean ware found in Epirus has received substantial description and analysis: for an overall account of Mycenaean pottery from Epirus (see Soueref 2001: 82-91).

Appearance, Shapes and Decoration: In terms of appearance, the lower quality of surfaces and fabrics in comparison with the wares of central and southern Greece should be mentioned. Local imitations are handmade, while imports are mostly wheelmade. In terms of open shapes, the most common is the *kylix* (FS 256–258, 264, 274–275) with tall, slender stems that are either solidly painted or decorated with bands. Kylikes make up approximately 22% of the Mycenaean pottery from Dodoni (Wardle 1972: 198). *Stirrup jars* and *alabastra* are relatively common Mycenaean shapes as well. Other open shapes that occur in modest quantities at many sites are *kraters* (e.g., FS 8, 281), *deep bowls* (FS 284–285), *stemmed bowls* (FS 305) *cups* and *dippers* (FS 236). Closed shapes are additionally represented by *piriform jars* (e.g., FS 39, 45, 58) and *amphora-like vessels*. Decoration is generally painted, characterized occasionally by geometric motifs, such as horizontal whorl-shell motifs and chevron patterns (FM 23 and 58, Wardle 1977: 177). An interesting case is the locally made kylix from Dodoni with traces of matt-painted, geometric ornament (Papadopoulos 1976: pl. 4β), which may belong to the Early Iron Age.

Fabric and manufacturing process: Local imitations of Mycenaean shapes are of a crude and gritty reddish fabric. This resembles the Epirus 2 and 3 fabrics, and firing techniques must also have been similar. Mycenaean inspired pottery (Epirus 4) was probably produced in Epirus together with these other classes, as in Western Macedonia (Sandars 1978: 96). It has also been suggested by Kilian that kylikes from Epirus, eastern Thessaly, Ithaka and southern Italy belong to the same group of pottery producing workshops (Kilian 1975, 12, note 238), but it is unclear what exactly is meant by 'workshops'. More evidence is needed to pursue such a line of argument.

Chronology, Distribution (Ioannina nomos and elsewhere) and Influences: In the Ioannina nomos, Epirus 4 is known in complete or nearly complete vessels and/or sherds from Kastritsa (# 29, kylikes, small amphora, stirrup jars), Neochoropoulo (# 34), Dodoni (# 43, kylikes, alabastra, stirrup jars, piriform jars, amphoras), Mazaraki (# 60, kylikes, alabastra, dipper, one-handled cup (kyathos), stirrup jars), and Neochoropoulo (# 34, bowl). In the rest of the Epirus district, Epirus 4 has been found at Kiperi (Papadopoulos 1981b) and Ephyra (Papadopoulos, all reports from 1978 – 1987), as well as from seven additional sites in the Preveza nomos as part of the Nikopolis Project (Tartaron 1996: 242-284). Mycenaean and Mycenaean inspired pottery is widely distributed all over Greece (Macedonia, Thessaly, the Ionian islands).

Albania and southern Italy. For a detailed overview of Mycenaean and Mycenaean inspired pottery, presence and influences in Epirus, see Soueref 2001.

Kylikes seem to determine the termini post- and ante- quem of Epirus 4. The earliest kylikes, from the Kiperi tholos tomb, are assigned to LH IIIA1 or LH IIIA1–2 (Papadopoulos 1981b: 16–18, fig. 4: 24–33). Sherds from Dodoni are of LH IIIA2 date (Wardle 1972: fig. 124: 476–477). Other fragments datable generally to LH IIIA and IIIB are found at Dodoni and Ephyra. The series of imported kylikes continues into LH IIIC (monochrome kylikes from Dodoni and Mazaraki). A kylix from Dodoni with matt-painted decoration (Papadopoulos 1976: pl. 4β) may be dated to the Early Iron Age[3].

2.3.7. The Ceramic Record of Late Prehistoric Epirus: Conclusions

The Late Prehistoric ceramic record of the Ioannina nomos and of Epirus as a whole implies culturally distinctive human presence limited to the east by the Pindos mountains, and from the west by the sea. Pottery from the Final Neolithic site at Doliana reveals a community in contact with developments in Albania, and indirectly with Macedonia (Douzougli and Zachos 2002). The ensuing fifteen centuries are, in archaeological terms, chronologically and socially undefined: at present there are no sites or artefacts that can be attributed unambiguously to the period from 3100–1600 B.C. Epirus 1a and possibly 1b, representing a simpler form of the pottery used at Doliana, may have been the only classes of pottery used in that long expanse of time to satisfy the basic needs of farming and herding communities for cooking pots and containers. I have also suggested that containers and eating and drinking implements may have also been made of wood, skin, and other perishable materials, thus making ceramic vessels of limited importance (see also Wardle 1993: 124).

New developments and influences seem to arrive around the time of the Shaft Graves, perhaps in the 17th century B.C. Imitations of Minyan vessels, already incorporated into the southern Albanian ceramic records (grey-fabric, 'pseudo-Minyan' pottery), were brought to Epirus and applied by potters using many of the techniques they already possessed for making Epirus 1b vessels. This resulted in Epirus 1c vessels. This development signalled the beginning of a gradual opening to foreign products and ideas that led to the formation, by the 14th century, of ties with emerging Mycenaean

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[3] For a possible reassessment of chronology in terms of the end of the Mycenaean civilisation and the beginning of the Early Iron Age (placing the Protogeometric within a narrow period between 1100 and 1070 BC), based on dendrochronological analysis of timbers from Assiros, see Kromer et al 2004.

centres in western Greece and the Ionian Islands. Those ties were strengthened, notably with the Ionian Islands, in the 14th–12th centuries (Souyoudzoglou – Haywood 1999: 140-142). At the time of the Bronze to Iron Age transition, as the traditions of the Mycenaean world began to wane, a second wave of influence from the north is marked in part by the appearance in Epirus of matt-painted pottery of Macedonian origin (Epirus 2), almost certainly brought to Epirus through southeastern Albania. At that time, and perhaps in association with this ware, new information permitted local potters to enhance their control over the firing environment, resulting in a superior Orange-Red handmade pottery (Epirus 3) that may eventually have replaced the enduring Epirus 1 classes, which went largely out of use by the 9th century B.C.

A provisional chronology for each pottery type is presented in the table below. For chronology, Doliana and Vitsa see also chapter 1.2.1.

Table 2.3.7a: Hypothetical chronological framework for the prehistoric pottery of Epirus* (adapted and enhanced from Tartaron in press: table 5.1)

Years B.C.	**Doliana**	**Epirus 1a & 1b**	**Epirus 1c**	**Epirus 2**	**Epirus 3**	**Epirus 4**	**Vitsa (K IVb)**
3500	●						
3400	●						
3300	●						
3200	●						
3100	●						
3000	○	○					
2900	○	○					
2800	○	○					
2700	○	○					
2600	○	○					
2500	○	○					
2400	○	○					
2300	○	○					
2200	○	○					
2100	○	○					
2000	○	○					
1900	○	○					
1800	○	○					
1700	○	○	○				
1600		●	●				
1500		●	●				
1400		●	●			●	
1300		●	●			●	
1200		●	●			●	
1100		●	●	●	○	●	
1000		●	●	●	●	●	
900		●	●	●	●		●
800			●		●		●
700					●		●

* Key: ○ = hypothetical; ● = certain

2.4: The Epirus Typology Quantified

This chapter comprises an attempt to offer the Epirus typology discussed above (chapter 2.3) in a quantified-oriented format. After some introductory and theoretical points (chapters 2.4.1 and 2.4.2 respectively), the typology's attributes are presented in data fields and tables (chapters 2.4.3 and 2.4.4).

2.4.1 Some Thoughts and Points on Quantitative and Qualitative Values

In Greece, as widely elsewhere, a qualitative approach similar to, and much more detailed than, the above (chapter 2.3), used to dominate archaeological training and practice. The field of quantification and statistical analysis for archaeology developed relatively recently (Drennan 1996; Shennan 1997). Pottery types are usually approached by means of detailed and accurate qualitative descriptions accompanied by photographs, drawings, comparanda, and bibliographical references. The great majority of pottery accounts would be primarily verbal, with a well-thought out and accurate text presenting as many attributes as possible as much in detail as possible. Separate paragraphs and/or chapters would qualitatively address different classes of individual types. The most frequent classes encountered are fabric oriented (such as colour, surface treatment, feel, and inclusions), vase construction techniques (such as mode of manufacture - handmade, wheelmade, moulded - and firing conditions), artistic (such as shapes, decoration and use). Quantitative data (such as sherd and pot counts, weight and rim diameter measurements), if collected and available, would be limited to an important but auxiliary role. Statistics of this kind would allow the researcher to describe the absolute and/or relative quantity of a type of pottery, rather than the type itself.

The pottery record of the Late Prehistoric Ioannina nomos is no exception, although it has to be acknowledged that individual researchers have produced and analysed data in quantitative format: Wardle introduced sherd and weight counts accompanied by hand drawn pie-charts in his analysis of Bronze Age pottery from Dodoni (site # 43) and other sites in Epirus (Wardle 1972: 193-220), and Tartaron offers some sherd counts of Bronze Age pottery from the Preveza nomos in his analysis based upon the Nikopolis Project discoveries (Tartaron 1996: 242-284). The present research aims to present pottery types in both a qualitative format (chapter 2.3) and quantitative layout (this chapter).

The qualitative approach as presented in the previous chapters (chapter 2.3.1 – 2.3.6) was based upon the four sub-headings used for every pottery type: 'summary and use', 'appearance, shapes and decoration', 'fabric and manufacturing process', and 'chronology, distribution (Ioannina nomos and elsewhere) and influences'. In the quantification-oriented format, clearly defined classes and sub-classes are the means by which pottery types are described. Attributes of every class are presented in quantifiable forms of continuous or discrete data, rather than qualitatively through descriptions. Every type of pottery is presented in a table rather than in continuous text. For example, the pottery type Epirus 1 is approached by a number of classes, one being 'Fabric'. This class is further approached by a number of sub-classes, one of them being 'Hardness'. Hardness is approached by an ordinal categorical three-option scale: soft (= can be scratched with a fingernail), hard (=cannot be scratched with a fingernail), and very hard (cannot be scratched with a knife). These types, classes, sub-classes and forms of attributes are more extensively discussed below. I consider this approach well structured, clear and easy to follow. Other reasons for its application include the potential use of statistics and statistical tests, the ability to see pottery attributes in another dimension, and to make typology more approachable to the non-expert as well as the inexperienced archaeologist (thus encouraging volunteers and making pottery analyses more open to the public).

It should, however, be clearly noted that my aim is not to contest or undermine qualitative accounts as opposed to quantitative ones. Qualitative and quantitative approaches may also reflect personal preferences and even ways of thinking, since people prefer to approach different things in different ways. Some people, including myself, find it much easier to choose a car or a computer by comparing quantitative characteristics (specifications and attributes in tables), while others prefer qualitative descriptions by experts and/or friends. It is the other way round with a shop and/or a restaurant. Such analyses are of course the subject of other research programmes, but in terms of the Late Prehistoric pottery types of the Ioannina nomos, I consider the two modes of thought and presentation as interrelated rather than mutually exclusive. Advantages and disadvantages can be attributed to both systems: the qualitative one is quite flexible and allows individually precise and tailored descriptions, while the quantitative one is more straightforward, easier to approach and more practical, especially for training archaeologists and/or interested individuals unfamiliar with the pottery in question.

2.4.2. The Epirus Typology Quantified: the Four Levels of Measurement

Statistically quantifiable measurement is achieved at one of four levels: nominal, ordinal (including the presence/absence/missing scheme), interval and ratio. The four levels of measurement have been extensively presented and discussed by others (Shennan 1997: 8-12; Orton 2000: 18), and there is no need for further discussion here. It is important to know at what level variables are measured. Many techniques can only be applied to variables at a certain level of measurement or higher. In describing the classes in the typology presented in the next chapter, I have used variables quantified in different levels of measurement.

Classes measured at the nominal level are: Name, Fabric Inclusions, Shapes, Decoration, and Findspots and References.

Classes measured at the ordinal level are: Fabric colour, Fabric Hardness, Fabric Feel, Fabric Texture, Fabric Surface Treatment, Fabric Inclusions Size, Fabric Inclusions Sorting, Decoration Extent, Decoration Colour, and Condition of pottery discovered. The present research also offers presence / absence variables in Part 3, where Late Prehistoric sites in the Ioannina nomos are presented and discussed. In the table 3.2.2a of Part 3, the presence / absence scheme has been transformed to presence (annotated by the symbol ♦) / absence (a gap) / presence reported (the symbol cluster ♦?), the latter referring to finds reported in publications but now lost, a fact that it is clearly noted in the gazetteer of sites for every occurrence.

A class measured at the interval level is that of Chronology.

Classes measured at the ratio level are: Fabric Inclusions Frequency, and Fabric Inclusions Size.

In terms of the four levels of measurements in archaeology, the following are pointed out:

- It is quite common to refer to nominal and ordinal variables as **categorical** (or discrete) variables and to interval and ratio as **continuous** variables. The variable values of categorical variables are usually chosen by the archaeologist and because this can be a fairly arbitrary process these are sometimes referred to as qualitative variables. The values of continuous variables tend to be more objectively arrived at, and these are sometimes called quantitative variables.
- Just because nominal variables are classified as the lowest level of measurement, their importance within archaeology must not be underestimated. Some fundamental

archaeological concepts involve the use of nominal data, the processes of classification and typology being good examples.

- All observations involve a level of accuracy, especially concerning continuous variables. This is part of the decision making processes of a research plan. Once data have been collected it will be impossible in most cases to improve their accuracy. To give an example, if measurements have been collected with an accuracy of two decimals (centimetres), accurately converting them to three decimals (millimetres) without re-measuring would be impossible.

2.4.3. The Epirus Typology Quantified: the Data Fields

Types are approached through main classes, sub-classes and attributes. Main classes are: name, fabric, shapes, decoration, state of discovery, sites of discovery, comments and examples. The characteristics of a pottery type for every class are presented through either categorical data (nominal or ordinal) or qualitative (small pieces of text). For most of the nominal and ordinal scales, I have used Shennan (1997), Orton et al. (1993), Barraclough (1992), Mathew et al. (1991), Rice (1987), and the Munsell Color Soil Charts.

For a full understanding of the data fields, continuous reference to the pottery types presented in chapters 2.3 (the Epirus typology) and 2.4.4 (relevant tables) is presupposed.

A. NAME of pottery type: The term Epirus followed by an annotation number of no mathematical significance has been chosen (Epirus 1, Epirus 2, etc.), forming a nominal level of measurement. The choice of the name is justified by the conclusion that research to date on Epirus overall (Hammond 1967; Soueref 2001) and on specific Epirote nomoi (Tartaron 1996 on Preveza; Dakaris 1971a and 1972a on the Arta and Thesprotia nomoi respectively; this thesis on Ioannina) indicate that the proposed classification scheme is applicable to, and compatible with, the notion of Epirus as an archaeological entity in Late Prehistory. The brackets following the name of a pottery type contain information that refers to the classification schemes discussed in chapter 2.2 and indicate type(s) incorporated from previous schemes.

B. FABRIC: Fabric is approached through visual and tactile examinations of the surfaces and fresh breaks, both in hand and occasionally using a binocular microscope at x 20 magnification. The following characteristics are recorded: colour, hardness, feel, surface treatment, inclusions. The conventions used in each of the categories are described below:

i. Colour: I have used the Munsell Soil Color Charts for colour names and numbers. The whole range of colours of the surface and core is given. Colours could be seen at an ordinal, and even at an interval level of measurement, given the order rank that is attempted in the Munsell Soil Color Charts and the quantification of colour values (quantifiable scales for colour properties, such as hue, saturation, brightness, contrast) introduced by image processing computer programmes, such as Adobe Photoshop 5.5. But until analytical colour and clay chemistry studies of Epirus' Late Prehistoric ceramics are produced, colours will be dealt with at the nominal level of measurement.

ii. Hardness: A threefold ordinal scale is followed: *Soft*, indicating that ceramics can be scratched with a fingernail; *Hard*, indicating that ceramics cannot be scratched with a fingernail; *Very hard*, indicating that ceramics cannot be scratched with a knife.

iii. Feel: A fivefold ordinal scale is followed: *Harsh*, indicating that the surface of the ceramic feels abrasive to the finger; *Rough*, indicating that the surface of the ceramic presents irregularities than can be felt; *Soapy*, indicating that the surface of the ceramic leaves the tactile impression of a soap surface; *Powdery*, indicating that the surface of the ceramic leaves the tactile impression of a powder; *Smooth*, indicating that the surface of the ceramic presents no irregularities that can be felt. All possible measurements refer to a surface in its basic state, without burnishing, slip and/or other surface treatment.

iv. Texture: Texture describes a freshly broken section on a fivefold ordinal scale: *Subconchoidal*, describing breaks somewhat like glass or flint breaks; *Smooth*, describing breaks that are flat or slightly curved, without visible irregularities; *Fine*, describing breaks that are small, with closely spaced irregularities; *Irregular*, describing breaks that are larger, with more widely spaced irregularities; *Hackly*, describing breaks that are large, with generally angular irregularities. Descriptions refer to sections observed by the naked eye. The use of a microscope may provide a more elaborated scale.

v. Surface treatment: This is described on a fourfold ordinal scale: *smoothed*, *burnished*, *trimmed*, and *fingered*.

vi. Inclusions: Inclusions have been approached through visual examination of the surfaces and fresh breaks, occasionally using a binocular microscope at x 20 magnification on randomly chosen sherds from most sites in the Ioannina nomos. The results presented here are preliminary in character. Further pottery-oriented research, especially petrographic analysis, is required for more detailed and accurate accounts to

be produced. Inclusions spotted are approached in terms of their frequency, size, and sorting, according to the scheme introduced by Orton et al. (1993: 240):

Frequency: The frequency of inclusions is approached using a ratio percentage scale as introduced by Mathew et al. (1991) and employed by Orton et al. (1993, fig. A.4) (see also pl. 10).

Size of inclusions: The ordinal / ratio scale measurement used are from Orton et al. (1993: 240), based on the United States Department of Agriculture standard sizes for sand grains: *very fine*: up to 0.1 mm. ; *fine*: 0.1 to 0.25 mm. ; *medium*: 0.25 to 0.5 mm. ; *coarse*: 0.5 to 1.00 mm. ; *very coarse*: larger than 1.0 mm.

Sorting: Sorting indicates the degree of homogeneity in size of the inclusions, and is approached by a dichotomous scale of *well-sorted* grains (all about the same size), and *ill-assorted* grains (of clearly different sizes).

C. SHAPES: Shapes have been divided into two widely used sub-classes: *open* and *closed*. Nominal data briefly describing a shape attribute every sub-class.

D. DECORATION: Four sub-classes have been observed and employed: *incised*, *impressed*, *plastic*, and *painted*. Percentages in brackets indicate the sub-class's frequency within the pottery type in the Ioannina nomos. Every sub-class is described in terms of extent, colour and nature as follows:

i. Extent: terms used for extent are: *all-over*, *areas*, *zones*, *patches*, and *spots*.

ii. Colour: Munsell Color Soil charts have been employed for colour descriptions.

iii. Nature: a brief text provides more details about the nature of the decorative motifs and applications in each subclass.

E. CONDITION of the pottery discovered: This class represents an attempt to address the present condition of the pottery type, after its discovery and perhaps also conservation. An ordinal four-point scale is used: *fine*, *weathered*, *poor*, *very poor*. Percentages in brackets are estimates, and indicate frequency within the pottery type in the Ioannina nomos.

F. FINDSPOTS and REFERENCES: For the Ioannina nomos, site numbers from the Gazetteer in Part III are given. References accompany sites outside the Ioannina nomos.

G. COMMENTS: This comprises the qualitative class in the typology. Thoughts, ideas, constraints, and other comments of supplementary character are presented here.

H. CHRONOLOGY: It is the interval class in the typology. expressed in years B.C.

H. EXAMPLES (photos, drawings): References to visual material in the plates.

2.4.4. The Epirus Typology Quantified: Data Tables

Table 2.4.4a: The Epirus 1a class tabulated

Epirus 1a

(encompassing almost the whole of K II and Krya 1, the coarse versions of K III and Krya 2, and Liatovouni 6a)

FABRIC				
Colour	**Hardness**	**Feel**	**Texture**	**Surface treatment**
From 5YR 6/8 (reddish / yellow) **to** 5YR 3 /4 (dark reddish brown)	**Soft /** **Hard /** Very hard	Harsh / **Rough /** Soapy / Powdery / Smooth /	Subconchoidal Smooth Fine **Irregular** Hackly	Smoothed Burnished **Trimmed** Fingered
	Inclusions:	Frequency:	Size:	Sorting:
	Chunk of rocks	10%	Very coarse	Well sorted
	Sandstone	5%	Fine	Well sorted
	Quartz	5%	Fine	Well sorted
	Calcite	5%	Fine	Well sorted

SHAPES	
Open:	*pithoid jars* (with vertical handles and outward everted rims)
	large conical bowls (with loop handles close to the rim)
Handles:	vertical, horizontal and wishbone
Rims:	outward everted
Bases:	flat and/or slightly rounded
Lugs:	lugs of different shapes / types

DECORATION			
	Extent	Colour	Nature
Incised:	Areas	Same as Fabric	Shallow short parallel lines, by fingernail or pointy tool
Impressed:	Areas	Same as Fabric	series of impressions on plastic clay bands, by fingertip or small oval object
Plastic:	Areas / zones	Same as Fabric	Bands (Horizontal and/or vertical), pellets, disks, lugs
Painted:	-		

CONDITION of the pottery discovered	Poor / very poor, very few whole vessels

FINDSPOTS and REFERENCES (TOTAL: 47 + 42 + 36 = 125 sites)

Ioannina nomos:
#1-11, 13, 16, 18-19, 22-23, 25-41, 43, 44, 46-48, 51, 53-57, 60, 62.
Total: 47 sites

Elsewhere: **Epirus apart from the Nikopolis project**
Aetos (Dakaris 1972a: 66), **Ammotopos** (Andreou 1994: 243), **Arta** (Dakaris 1961/2: 196 n. 39, Hammond 1967: 315; Vokotopoulou 1972: 116), **Asprochaliko** (Dakaris 1971a: 29–30), **Avlotopos** (Dakaris 1972a: 66), **Ayia Kyriaki** (Vokotopoulou 1968: 293, pl. 237), **Ayios Georgios (vicinity)** (Dakaris 1971a: 29), **Ayios Ioannis (Nekyomanteion)** (Leake 1835: (I) 185, 231–234, 242 (III) 3, 7, 35 (IV) 7–8, 51–56; Philippson and Kirsten 1956/8: 39, 101, 104, 212–213; Dakaris 1958a; 1958b; 1960a; 1960b; 1962; 1963a; 1963b; 1963c; 1967c: 32; 1972a: 28–29, 32, 62–63; 1975a; 1975b; 1976a; 1976b; 1977a; 1977b; Lepore 1962: 14; Hammond 1967: 65–66, 285, 291, 313, 319–320, 326, 362, 366, 369, 387; Vokotopoulou 1969b: 193–194; Scoufopoulos 1971: 90–91; Snodgrass 1971: 172; Hope Simpson and Dickinson 1979: 299–300); **Cheimerio-Kouteti** (Dakaris 1972: 63; Mouselimis 1989: 44), **Dragani** (Dakaris 1972a: 64) ,

Elaphotopos (Dakaris 1971a: 29–30), **Gianniotio** (Vokotopoulou 1968: 286, pl. 228), **Goumani** (Dakaris 1972a: 66), **Graikiko** (Hammond 1967: 315), **Kassope** (Dakaris 1971a: 29), **Kastri** (Dakaris 1971a: 29) , **Kastro Rogon (Vouchetio)** (Dakaris 1971a: 30, 32), **Kiperi** (Dakaris 1960a: 205; 1960b: 123–127, pl. 92; 1960c: 110–111; 1967c: 32; 1972a: 32–33, 64, Desborough 1964: 102; Hammond 1967: 76–77, 313; Snodgrass 1971: 172; Papadopoulos 1976: 276–280, 282–285, 311, 319, pls. 2, 20; 1981b, Wardle 1977: 162, 166; Hope Simpson & Dickinson 1979: 300; Hope Simpson 1981: 177), **Kokkinopilos** (Dakaris 1971a: 29), **Kopani** (Andreou 1994: 241), **Maratovouni** (Karatzeni 1996), **Lelovo** (Hammond 1967: 315), **Louros River (vicinity)** (Dakaris 1971: 29), **Oropos** (Andreou 1994: 242), **Palaiorophoro** (Dakaris 1971a: 29), **Paramythia-Tsardakia** (Leake 1835: (I) 233–234, (II) 59–68, Philippson and Kirsten 1956/8: 99–106, Dakaris 1965: 349–351, pl. 415; 1967c: 34, figs. 2, 3, pl. I; 1972a: 64–65; Vokotopoulou 1969b: 197–198, pl. 28), **Pediada Kokytou** (Dakaris 1972a: 64), **Philiates** (Hammond 1967: 86, 303; Dakaris 1972a: 66), **Philippiada** (Andreou 1994: 242), **Pyrgos Ragiou** (Preka-Alexandri 1987: 353), **Riziani** (Dakaris 1961/2: 196, pl. 225; 1972a: 65; Hammond 1967: 335; Vokotopoulou 1972: 116), **Rizovouni** (Andreou 1994: 242), **Salaora** (Hammond 1967: 318), **Siroupolis** (Hammond 1967: 332), **Skala** (Dakaris 1972a: 66), **Skaphidaki** (Andreou 1987: 319, pl. 174), **Stephani** (Andreou 1994: 243), **Themelo** (Andreou 1994: 242), **Thesprotiko** (Dakaris 1971a: 28–30, 32), **Trikastro** (Dakaris 1971a: 29–30), **Vigla (Themelo)** (Andreou 1994: 242), **Vrachanas** (Dakaris 1972a: 64).

Total: 42 sites

Elsewhere: **Nikopolis project findspots** (Tartaron 1996: 242-284)
Alonaki island, Ammoudia, Ayia Eleni, Ayia Triada, Ayios Minas, Cheimadio, **Ephyra-Nekyomanteion**, Galatas, Grammeno, **Kastri**, Kastriza, Kastriza vicinity, Kastrosykia, **Kiperi**, Kokkinopilos, Koroni, Koronopoulos, Koulia, Koulia Grove, Koumasaki, Latomeion, Michalitsi, Ormos Vathy, Oropos, Pogonitsa, Pountas, Pountas East, Pountas East vicinity, Preveza-Alonaki, **Rizovouni**, **Skaphidaki**, Skaphidaki vicinity, Skepaston, Spilaion, Tsouknida, Valanidorrachi, Vassoula, Vlachika, Vouvopotamos, Xirolophos 1, Xirolophos 2.

Total: 36 + 5 (sites in bold were known before the Nikopolis project) = 41 sites

COMMENTS		
Coarse pottery serving cooking and probably storing needs. It is the dominant ware of the Late Prehistory of Epirus. Present in **76%** of Ioannina nomos sites.		
Chronology:	3000– 900 B.C.	[3000-1700 B.C. dates are hypothetical]
EXAMPLES (photos, drawings)		
Pls. 9b, 13b, 14e-f, 17a, 25a-b, 29a, 31a-b, 31e, 32d, 33b, 34a. For more examples, see References above.		

Table 2.4.4b: The Epirus 1b class tabulated

Epirus 1b

(encompassing almost the whole of K III and Krya 2, the semi-coarse versions of K II and Krya 1, and Liatovouni 6b)

FABRIC				
Colour	**Hardness**	**Feel**	**Texture**	**Surface treatment**
From 5YR 6/8 (reddish / yellow) **to** 5YR 3 /4 (dark reddish brown)	**Soft /** **Hard /** Very hard	Harsh / **Rough /** Soapy / **Powdery /** Smooth /	Subconchoidal Smooth Fine **Irregular** Hackly	Smoothed Burnished **Trimmed** Fingered
	Inclusions:	Frequency:	Size:	Sorting:
	minimal			

SHAPES		
Open:	*cups* (with one or two handles) *bowls* (conical and hemispherical)	*dippers* *deep bowls* *smaller jars*
Handles:	vertical	
Rims:	everted or vertical	
Bases:	flat or rounded	
Lugs:	vertically pierced or hollowed	

DECORATION			
	Extent	Colour	Nature
Incised:	Areas	Same as fabric	Shallow short parallel lines, by fingernail or pointy tool
Impressed:	Areas	Same as fabric	series of impressions on plastic clay bands, by fingertip or small oval object
Plastic:	Areas	Same as fabric	Bands (Horizontal and/or vertical), pellets, disks, lugs
Painted:	-		

CONDITION of the pottery discovered	Poor , almost no whole vessels

FINDSPOTS and REFERENCES (TOTAL: 12 sites + the Nikopolis Project ones)

Ioannina nomos:
Liatovouni (# 6), Meropi (# 13), Elaphotopos (# 19), Kastritsa (# 29), Krya (# 31), Koutselio (# 32), Neochoropoulo (# 34), Dodoni (# 43), Mazaraki (# 60).
Total: 9 sites

Elsewhere: **Epirus apart from the Nikopolis project**
Nekyomanteion (Dakaris 1975a; 1976a; 1977a), **Ephyra** (Papadopoulos, all reports from 1978 – 1987), and **Kiperi** (Papadopoulos 1981b)
Total: 3 sites

Elsewhere: **Nikopolis project findspots** (Tartaron 1996: 242-284)
Tartaron accepts the K II/III pottery class as a whole, so it is not clear what is just Epirus 1a (roughly K II) and what is Epirus 1a together with Epirus 1b (roughly KIII). Note that KIII has always been found together with KII.
Total: unknown

COMMENTS

Semi-coarse pottery serving eating and drinking needs, possibly of a relatively elite character. It appears with Epirus 1a. Present in **15%** of Ioannina nomos sites.

Chronology:	3000– 900 B.C.	[3000-1700 B.C. dates are hypothetical]

EXAMPLES (photos, drawings)

Pl. 9c. For more examples, see References above.

Table 2.4.4c: The Epirus 1c class tabulated

Epirus 1c

(encompassing the K II/III Minyan subset, Liatovouni 5a, and Liatovouni 5b)

FABRIC				
Colour	**Hardness**	**Feel**	**Texture**	**Surface treatment**
From 5YR 6/8 (reddish / yellow) **to** 5YR 3 /4 (dark reddish brown)	**Soft /** **Hard /** Very hard	Harsh / Rough / Soapy / **Powdery /** Smooth /	Subconchoidal Smooth **Fine** Irregular Hackly	**Smoothed** **Burnished** Trimmed Fingered
	Inclusions:	Frequency:	Size:	Sorting:
	minimal			

SHAPES		
Open:	*kantharoi* (with one or two handles) *cups* *small jugs*	*dippers* *deep bowls* *smaller jars*
Handles:	vertical	
Rims:	everted or vertical	
Bases:	flat or rounded	
Lugs:	-	

DECORATION			
	Extent	Colour	Nature
Incised:	No		
Impressed:	No		
Plastic:	No		
Painted:	No		

CONDITION of the pottery discovered	Fine, almost no whole vessels

FINDSPOTS and REFERENCES (TOTAL: 9 + 3 + 8 = 20 sites)

Ioannina nomos:
Liatovouni (# 6), Meropi (# 13), Elaphotopos (# 19), Kastritsa (# 29), Krya (# 31), Koutselio (# 32), Neochoropoulo (# 34), Dodoni (# 43), and Mazaraki (# 60)
Total: 9 sites

Elsewhere: **Epirus apart from the Nikopolis project**
Nekyomanteion (Dakaris 1975a; 1976a; 1977a), **Ephyra** (Papadopoulos, all reports from 1978 – 1987), and **Kiperi** (Papadopoulos 1981b)
Total: 3 sites

Elsewhere: **Nikopolis project findspots** (Tartaron 1996: 242-284)
Galatas, Kastritza, Koulia Grove, Pountas East, Skaphidaki, Spilaion, Vouvopotamos, and Xilorofos 2
Total: 8

COMMENTS

Semi-coarse pottery serving eating and drinking needs, possibly of a relatively elite character. It appears with Epirus 1a. Present in **15%** of Ioannina nomos sites.

Chronology:	1700 – 800 B.C.	[1700-1600 B.C. dates are hypothetical]

EXAMPLES (photos, drawings)

Pls. 17f, 23c, 26b, 29e, 35c. For more examples, see References above.

Table 2.4.4d: The Epirus 2 class tabulated

Epirus 2

(encompassing the K IVa, Krya 1c, and Liatovouni 2c)

FABRIC				
Colour	**Hardness**	**Feel**	**Texture**	**Surface treatment**
From 5YR 6/8 (reddish / yellow) **to** 5YR 3 /4 (dark reddish brown)	**Soft /** **Hard /** Very hard	Harsh / Rough / Soapy / **Powdery /** Smooth /	Subconchoidal **Smooth** Fine Irregular Hackly	**Smoothed** **Burnished** Trimmed Fingered
	Inclusions:	Frequency:	Size:	Sorting:
	minimal			

SHAPES	
Open:	*bowls* (small, deep, with vertical handles), deep *kylikes* (deep, high, with cylindrical stem, and ring base) [see Epirus 4 class (Mycenaean Inspired wares], *tankards* (small)
Closed:	*amphorae* *cutaway-neck jugs*
Handles:	vertical
Rims:	everted or vertical
Bases:	flat or rounded
Lugs:	-

DECORATION			
	Extent	Colour	Nature
Incised:	No		
Impressed:	No		
Plastic:	No		
Painted:	Areas	geometric designs and motifs, in matt dark brown to black paint: zigzag lines, painted and hatched triangles, checkerboard patterns, S-shapes, and horizontal bands	

CONDITION of the pottery discovered	Fine, not many whole vessels

FINDSPOTS and REFERENCES (TOTAL: 7 + 1+ 8 = 16 sites)

Ioannina nomos:
Liatovouni (# 6), Meropi (# 13), Kato Pedina (# 23), Kastritsa (# 29), Krya (# 31), Koutselio (# 32), Dodoni (# 43)
Total: 7 sites

Elsewhere: **Epirus apart from the Nikopolis project**
Vitsa (Vokotopoulou 1986; Vokotopoulou 1987; Vokotopoulou 1994; Tartaron in press: fig. 5.6)
Total: 1 site

Elsewhere: **Nikopolis project findspots** (Tartaron 1996: 242-284)
Ephyra-Nekyomanteion, Kastriza, Kiperi, Pountas, Pountas East, Skaphidaki, Vouvopotamos, Xilorofos 2
Total: 8 sites

COMMENTS

It is a ware of Macedonian origin, semi-coarse to fine, matt-painted, serving eating and drinking needs, possibly of a relatively elite character. It has been found outside Epirus (see chapter 2.3.4). It is present in **11%** of Ioannina nomos sites. It has many similarities to Epirus 3 (orange-red) in terms of fabric. For this reason, Epirus 2 and Epirus 3 sherds are dealt with as one class in Tartaton's work for the Nikopolis Project (1996: 242-284).

Chronology:	1100 – 900 B.C.

EXAMPLES (photos, drawings)

Pls. 9d, 18a, 25g, 18c-f, 29b-c, 31b-c, 33a. For more examples, see References above.

Table 2.4.4e: The Epirus 3 class tabulated

Epirus 3

(encompassing the 'Orange-Red' ware, Krya, Liatovouni 1a, Liatovouni 1b, Liatovouni 2a, and Liatovouni 2b)

FABRIC

Colour	Hardness	Feel	Texture	Surface treatment
From 5YR 7/8 (reddish / yellow) **to** 5YR 5 /8 (yellowish red)	**Soft /** **Hard /** Very hard	Harsh / Rough / Soapy / **Powdery /** Smooth /	Subconchoidal **Smooth** Fine Irregular Hackly	**Smoothed** **Burnished** Trimmed Fingered
	Inclusions:	Frequency:	Size:	Sorting:
	minimal			

SHAPES	
Open:	*globular jars* *handless small bowls* *kylikes* (deep, high, with cylindrical stem, and ring base) [see Epirus 4 class (Mycenaean Inspired wares] *deeper bowls* (some conical) *bowls* of different types from Vitsa
Closed:	*amphorae* with up to four handles from Vitsa
Handles:	vertical
Rims:	everted or vertical
Bases:	flat
Lugs:	-

DECORATION (very rare, almost inexistent)

	Extent	Colour	Nature
Incised:	Areas	Same as fabric	Dots and slashes (Wardle1972: 205)
Impressed:	Areas	Same as fabric	Cordons (just 1 case, Wardle1972: 205)
Plastic:			
Painted:	-		

CONDITION of the pottery discovered	Poor / very poor, very few whole vessels

FINDSPOTS and REFERENCES (TOTAL: 6 + 1 + 7 = 14 sites)

Ioannina nomos:
Liatovouni (# 6), Meropi (# 13), Elaphotopos (# 19), Kastritsa (# 29), Krya (# 31), Dodoni (# 43)
Total: 6 sites

Elsewhere: **Epirus apart from the Nikopolis project**
Ephyra; Tartaron (in press, chapter 5)
Total: 1 site

Elsewhere: **Nikopolis project findspots** (Tartaron 1996: 242-284)
Ephyra-Nekyomanteion, Kastriza, Kiperi, Pountas, Pountas East, Skaphidaki, Vouvopotamos, Xilorofos 2
Total: 7 + 1 (sites in bold fonts were known before the Nikopolis project) = 8 sites

COMMENTS

It is a ware of Macedonian origin, semi-coarse to fine, thought to have replaced Epirus 1a towards the end of the Late Bronze Age. It is present in **10%** of Ioannina nomos sites. It has many similarities to Epirus 2 (matt-painted) in terms of fabric. For this reason, Epirus 2 and Epirus 3 sherds are dealt with as one class in Tartaron's work for the Nikopolis Project (1996: 242-284).

Chronology:	1100 – 700 B.C.	[1100-1000 B.C. dates are hypothetical]

EXAMPLES (photos, drawings)

No examples available in the plates of this thesis. See Tartaron in press, chapter 5, for the latest account.

Table 2.4.4f: The Epirus 4 class tabulated

Epirus 4

(encompassing Liatovouni 7 and all Mycenaean and imitation Mycenaean wares)

FABRIC : see Epirus 2 and Epirus 3 classes

Colour	**Hardness**	**Feel**	**Texture**	**Surface treatment**
Usually 5YR 5/8 (yellowish red)	**see Epirus 2 and Epirus 3 classes**			
	Inclusions:	Frequency:	Size:	Sorting:
	see Epirus 2 and Epirus 3 classes			

SHAPES

Open:	*kylix* (FS 256–258, 264, 274–275) with tall, slender stems that are either solidly painted or decorated with bands	*kraters, deep bowls* *stemmed bowls* *cups* *dippers*
Closed:	*stirrup jars, alabastra, piriform jars* (FS 39, 45, 58), *amphora-like vessels*	

DECORATION

	Extent	Colour	Nature	
Incised:	No			
Impressed:	No			
Plastic:	No			
Painted:	Areas	horizontal whorl-shell motifs and chevron patterns		

CONDITION of the pottery discovered	Fine

FINDSPOTS and REFERENCES (TOTAL: 8 + 2 + 7 = 17 sites)

Ioannina nomos:
Liatovouni (# 6, kylikes), Meropi (#13, kylikes, other), Aristi (#18, kylix), Kastritsa (# 29, kylikes, small amphora, stirrup jars), Krya (# 31, kylikes), Neochoropoulo (# 34, bowl), Dodoni (# 43, kylikes, alabastra, stirrup jars, piriform jars, amphoras), Mazaraki (# 60, kylikes, alabastra, dipper, one-handled cup (kyathos), stirrup jars).
Total: 8 sites

Elsewhere: **Epirus apart from the Nikopolis project**
Kiperi (Papadopoulos 1981b) and Ephyra (Papadopoulos, all reports from 1978 – 1987)
Total: 2 sites

Elsewhere: **Nikopolis project findspots** (Tartaron 1996: 242-284)
Galatas, Kastri, Kastriza, Koronopoulos, Koumasaki, Skaphidaki, and Vouvopotamos
Total: 7 sites

COMMENTS

It comprises all vessels with elements of Mycenaean character (Mycenaean and imitation Mycenaean local and/or imported wares). The most common shape is the kylix. It is present in **13%** of Ioannina nomos sites.

Chronology:	1400 – 1000 B.C.	

EXAMPLES (photos, drawings)

Pls. 9f, 18b, 25b, 29f-i, 30a-d, 34c, 35a-b, 43f. For more examples, see References above.

PART 3

THE TOPOGRAPHICAL ARCHAEOLOGY OF THE IOANNINA NOMOS IN LATE PREHISTORY: A GAZETTEER AND COMMENTARY

3.1. Introduction

In this chapter a catalogue / gazetteer of Late Prehistoric sites in the Ioannina nomos is presented. A commentary on the entries and their organisation precedes the gazetteer, and brief discussions and comments of the finds and their context for each entry follow. This gazetteer comprises a concerted effort to create as complete a record as possible, based upon the outcomes of my own personal research in the field, in the archives and files of the 12th Ephorate of Prehistoric and Classical Antiquities in Ioannina, as well as relevant bibliography.

Let us address the following issues before proceeding:

3.1.1. The gazetteer and its Predecessors

Gazetteers of the late prehistory of Epirus and the Ioannina nomos have been drawn in the past. Hammond (1967) presents the topographical archaeology of the whole of Epirus and adjacent areas. Wardle (1972) brought together all the evidence for the Bronze Age west of Pindos, Papadopoulos (1976) concentrated on the Bronze Age of Epirus, Soueref (in his 1986 PhD thesis published in 2001) focused upon the Mycenaean evidence from Epirus. In the sense of acquiring, collecting, and presenting archaeological data, my research is similar in concept to these works: it has a spatial focus (the Ioannina nomos), it is up-to-date (2003), and it includes past research and publications (bibliography). However, it aims to offer an extra element that in the past was either unavailable or underdeveloped and difficult to use: an information technology factor, which has been applied and can be summarised in a five-fold way:

a. topography: Global Positioning Systems readings and a digital base-map (chapter 4.3) have been employed, in order for the best possible topographical designation to be achieved.

b. design: all entries have been organised and offered in an electronic format (CD-ROM in Appendix IV).

c. availability: upload-ability to the World Wide Web, allowing continuous and direct access to archaeologists, researchers, educators and the interested reader (chapter 4.2).

d: continuous updating, a process that makes the data entries dynamic rather than static, allows straightforward input of new entries, alterations, corrections and amendments in an uncomplicated way.

e: expandability to other areas and/or time periods.

In this sense, it is the opening of a dynamic catalogue that it is presented in this research rather than the completion of a static one. Although every possible effort has been made, I acknowledge the possibility that occurrences of Late Prehistoric material may have been omitted. I also accept (and hope) that more entries will have to be added in the near future, thanks to ongoing archaeological research and efforts. It is also hoped that this catalogue may provide a model worth-considering and applying to the topographical archaeology of other areas of Epirus and beyond[1].

3.1.2. Topographical Archaeology versus Archaeological Topography

The term topographical archaeology has been preferred to the term archaeological topography. I consider the two concepts as very close, but significantly different. The concept of archaeology comprises the main focus and objective of this research; therefore it is put as the noun of the phrase. Topography is seen as an attributory concept and therefore used as an adjective. Although both are achieved to an extent, my aim has been more to present the Late Prehistoric archaeology of the Ioannina nomos from a topographic point of view, and less to portray the topography of the nomos from an archaeological point of view.

3.1.3. The concept of 'Site' in this Gazetteer

The concept of 'site' in the world of archaeology and archaeological theory has been given numerous definitions, meanings and approaches (for a history of the relevant debate see Ebert 2001: 3-14). An important semiotic note in this part of the thesis is the use of the word 'site' with the meaning of location / findspot of archaeological material. This ranges from the real or hypothetical locus of a chance find(s) to a fully excavated settlement or cemetery. In the context of the archaeology of Epirus, it is worth referring to the three-fold classification proposed by Tartaron (1996: 98-99). Tartaron discusses the Bronze Age findspots in the Preveza nomos in three ordinal classes: sites ('high density concentrations of material relative to that of the surrounding landscape'), off-site scatters ('low- to medium-density concentrations' as opposed to sites) and isolated findspots ('discovery of individual artifacts or very low-density occurrences'). As Tartaron himself admits, this designation is based upon personal interpretation rather than strict numerical qualifications. Therefore, the specific criteria and circumstances

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[1] Dr Zachos (Ioannina) and Prof. T. Tartaron (Yale) have already expressed interest and enthusiasm towards co-operating in organising and implementing an electronic database on the prehistory of Epirus, based upon initial suggestions presented elsewhere (Papaioannou 2003), and I would like to thank them for that.

under which an isolated findspot may be upgraded to an off-site scatter and an off-site scatter to a site, cannot be well defined. Until a more efficient and straightforward classification can be made, I have decided to refer to every archaeological manifestation as a 'site', and then to the geographical, topographical and archaeological qualities of every site individually.

3.1.4. Organisation of the Entries

Entries have been organised by geographical zones and were classified into seven districts. In defining these districts the following points were taken into account:

1. major geographical features, such as lakes, rivers and mountains (see also chapter 1.4 above).

2. area names in unofficial and semi-official use.

3. demoi/koinotites of the Kapodistrias Plan (see also chapter 1.5.1 above).

4. previous geographical distinctions, such as the pre-Kapodistrias four-fold 'eparchies' system (σύστημα επαρχιών), the pre-1913 Ottoman prefectures system, and the archaeological bibliography (Hammond 1967; Zachos 1997; Tartaron 1996) (see also chapter 1.5.1 above).

The catalogue includes the 62 sites known in summer 2003. The following entries were last updated in November 2003.

3.2: Data Fields

3.2.1. The Districts (overview)

The Districts are as follows (pl. 11a, map 1):

I. The Konitsa district (north part of the nomos, 9 sites: # 1-9, pl. 12).

II. The Pogoni district (north-west part of the nomos, 8 sites: # 10-17, pl. 20).

III. The Zagori – Kalpaki district (central-north part of the nomos, 7 sites: # 18-24, pl. 24)

IV. The Ioannina - Dodoni district (central part of the nomos, 19 sites: # 25-43, pl. 28).

V. The West Pindos - Arachthos district (east part of the nomos, 5 sites: # 44-48, pl. 37).

VI. The Upper Louros – Upper Acheron district (south part of the nomos, 9 sites: # 49-57, pl. 38).

VII. The Upper Thyamis (Kalamas) district (central-south-west part of the nomos, 5 sites: # 58-62, pl. 41).

3.2.2. The Sites (overview)

The following table summarises the gazetteer to provide a ready overview of the archaeology of the Ioannina nomos. **A** stands for 'Architecture', **B** for 'Burials', **P** for 'Pottery', **Br** for 'Bronze artefacts', **L** for 'Lithic artefacts' and **Ot** for 'Other finds'. Question marks indicate possible and/or questionable presence. The format follows that of similar tables in Tartaron (1996: 61-62) and Tartaron & Zachos (1999: 58), the former referring to the archaeology of the Preveza nomos, the latter to the Mycenaean objects found in Epirus. The present table and the gazetteer thus expand and/or update these previous studies.

Table 3.2.2a: Late prehistoric sites in the Ioannina nomos

Sites names / numbering	A	B	P	Br	L	Ot	Topo-info
1. Distrato			♦				Part of nomos: **north** District: **Konitsa** Sites: **9** Plates: **12-19**
2. Iliorachi			♦				
3. Kallithea/Megali Goritsa			♦		♦		
4. Kleidonia			♦				
5. Konitsa School of Agriculture	♦		♦	♦?	♦		
6. Liatovouni	♦	♦	♦	♦		♦	
7. Mesogephyra	♦?	♦?	♦	♦			
8. Palaiogoritsa	♦?	♦?	♦				
9. West Slopes of Aoos – Voidomatis Valley			♦				
10. Kephalovryso	♦	♦	♦				Part of nomos: **north-west** District: **Pogoni** Sites: **8** Plates: **20-23**
11. Ktismata		♦	♦				
12. Lachanokastro						♦	
13. Meropi	♦	♦	♦	♦	♦?	♦	
14. Panayia Pogonianis		♦				♦	
15. Stavrodromi						♦	
16. Vissani		♦	♦				
17. Zeravina				♦			
18. Aristi	♦	♦	♦		♦		Part of nomos: **central -north** District: **Zagori - Kalpaki** Sites: **7** Plates: **24-27**
19. Elaphotopos/Kalyvia Elaphotopou		♦	♦	♦	♦		
20. Greveniti					♦		
21.Kakousioi				♦			
22. Kalpaki		♦	♦	♦	♦	♦	
23. Kato Pedina		♦	♦	♦			
24. Tristeno						♦	

Sites names / numbering	A	B	P	Br	L	Ot	Topo-info
25. Ayioi Anargyroi	♦	♦	♦				
26. Dourouti			♦			♦	
27. Drabatova / Amphithea			♦	♦?			
28. Ioannina Island			♦				
29. Kastritsa		♦	♦	♦		♦	
30. Kato Lapsista		♦?	♦				
31. Krya	♦	♦?	♦	♦	♦	♦	Part of nomos: **central**
32. Koutselio			♦				District: **Ioannina - Dodoni**
33. Lykotrichi			♦				
34. Neochoropoulo	♦?	♦	♦				Sites: **19**
35. Neokaisareia	♦?		♦				
36. Passarona / Gardiki			♦	♦			Plates: **28-36**
37. Pedini / Ayioi Apostoloi		♦	♦	♦			
38. Perama			♦		♦	♦	
39. Rodotopi			♦		♦		
40. Sentenikos			♦				
41. Stavraki			♦?				
42. Tsergiani				♦			
43. Dodoni	♦		♦	♦			
44. Anthochori		♦?	♦	♦			Part of nomos: **east**
45. Metsovo					♦		District: **West Pindos - Arachtos**
46. Pramanta			♦	♦	♦		Sites: **5**
47. Vaxia			♦	♦			Plates: **37, 39a-c**
48. Vovousa	♦		♦				
49. Georgani					♦		Part of nomos: **south**
50. Katamachi				♦	♦		District: **Upper Louros – Upper Acheron**
51. Kopani		♦	♦			♦	
52. Pesta Sklivanis				♦?			Sites: **9**
53. Romano		♦	♦	♦			
54. Terovo			♦	♦			Plates: **38, 39d-f, 40**
55. Theriakisio	♦	♦	♦			♦	
56. Toskesi – Achladea			♦		♦		
57. Sistrounio		♦?	♦				
58. Despotiko		♦		♦			Part of nomos: **central-south-west**
59. Gribiani		♦?		♦			District: **Upper Kalamas**
60. Mazaraki	♦	♦	♦	♦	♦	♦	Sites: **5**
61. Vereniki				♦			Plates: **41-43**
62. Zalongo			♦				

3.2.3. The Gazetteer

In the gazetteer, the following standard data are recorded for each entry, unless irrelevant or unknown for a given findspot.

3.2.3.1: Site Number and Names

Each site is given for reference reasons a site number (site #), and throughout this thesis, as noted above (see Preface), site numbers always accompany site names. Within each district, sites are presented alphabetically. The numbering of sites is continuous through the districts. This number is the only static attribute of the catalogue, since it will have to change in the event of any new entry.

Sites in the Ioannina nomos acquired their names in many ways: by their presumed ancient name (e.g. Dodoni, site # 43 and Passarona, site # 36); by the name of the neighbouring village (e.g. Terovo, site # 54); by the name of the adjacent area (e.g. Ioannina Island, site # 28); by a main geographical feature of the area, such as a lake (e.g. Zeravina, site # 17). After World War II many locations, villages and areas have been slightly or radically renamed. For example, modern Aristi used to be called 'Artsista' (site # 18), and the village of Gribiani (site # 59) is now named 'Areti'. This may lead to confusion affecting archaeological research, the best example being Soueref's comment and misplacement of the site of Lachanokastro (site # 12), which is now known as Oraiokastro (Soueref 2001: 44). In a few cases, names coincide, causing confusion (e.g. Megali Goritsa, site # 3, can be confused with Goritsa, an old name for Rodotopi, site # 39). Old names are still in use to a certain extent (Oikonomou 1991), but they will soon be forgotten. Modern maps do not offer old names. Topographic maps of Γεωγραφική Υπηρεσία Στρατού (Hellenic Army Geographical Service, or HAGS) offer the names in use when the corresponding map-sheet was created.

Each site in the gazetteer has been given a primary name in bold, followed by other names in parenthesis. Its occurrence and frequency in the English bibliography are the factors which influenced the choice of the primary name in most cases. Where a site has not been mentioned in English (e.g. Vereniki, site # 61), or where there are different spellings in English (e.g. Dodoni, site # 43), a system involving transliteration and a compromise between the 'phonetic', the 'classical' and the 'modern' had to be followed. All other names (old and modern, Greek and English) appear in the parenthesis following the primary name. Where necessary, notes commenting on the name form part of the discussion of the entry.

3.2.3.2. Topography

The geography of the Ioannina nomos as a whole has been briefly discussed above (chapter 1.4). Introductory comments on the geography and hydrology of every district can be found within the gazetteer just before the entries for each district. For every entry specific topographical information is given to provide further insight into the area's location, position and surroundings.

A. Map Reference: Global Positioning System (GPS) Readings

All measurements were taken using a hand-held Global Positioning Station (GARMIN GPS III) with WGS-84 map datum in what was considered the notional centre of the site. The specifications of this unit can be found on the webpage http://www.garmin.com/products/gpsIII/spec.html (last visited, 20/09/2004) as well as in the Appendix I. For sites for which only imprecise information exists, such as chance finds handed in by local inhabitants (e.g. Anthochori, site # 44) or just reported (e.g. Distrato, site # 1), GPS readings of the central square of the nearby village have been assigned, an action that is clearly indicated in square brackets.

For the GPS readings presented here, the reader must keep the following in mind:

(a) Number of Satellites: a GPS reading was acceptable only if five or more satellites were used by the GPS unit to compute and update a position, and three of them in the outer ring of the unit's Satellite Screen' (less than 45 degrees), to ensure optimal positional accuracy (Brawn 2003: 32). The unit is capable of tracking and using up to twelve satellites, but I was never fortunate enough to get a measurement via more than eight. The average number of satellites was six.

(b) Acquisition of Position, Aquisition Time and Update Rate: The GARMIN GPS III unit offers continuous update every second. For the acquisition of a position reading, I would place the unit on the ground and wait for approximately fifteen to twenty minutes (approximately 900 – 1200 updates). This process was first exercised in summer 2000 and repeated in summer 2001. In both visits I marked the position of the unit with a wooden peg tacked in the ground (losing just 4 pegs from summer 2000 to summer 2001). In summer 2002, all readings were tested in real life operations: Ms Arietta Papaioannou used my 2001 readings to lead me to the positions of the pegs. This test resulted in errors of approximately 1-36 metres, with a mean of about 6-13 metres. This method was chosen both for its real life practical character and (due to lack of extra GPS units) the non-availability of a Differential GPS resource. I have applied similar

methods in the Zoara / Ghor es-Zafi project in Jordan (Politis 2002: 5-6 and http://www.hsnes.com/zoara.htm , last visited 20/09/2004, for a brief overview) as well as in the Stavros Valley Survey in Ithaka, Greece (Whitley 2002/2003a: 42-44, for a preliminary report). Results and comparisons will be presented elsewhere.

(c) Accuracy of the position fix: The GPS unit offers Estimated Position Error (EPE) and Dilution of Precision (DOP) figures for every measurement taken. DOP measures satellite geometry quality in a scale from one to ten. The lowest numbers indicated the greatest accuracy and highest numbers the lowest. EPE is given in metres or feet and refers to the horizontal position, taking into account DOP and other factors. Average DOP was 1.8 and average EPE was 8 metres. It should also be noted that the GPS unit has an accuracy specification of 15 metres, which goes down to 1-5 metres in the case of a Differential GPS use. As mentioned in the previous paragraph, practical reasons did not allow Differential GPS readings.

(d) Position Format: GARMIN GPS III, as most GPS units, uses WSG84 (the main American datum) as its default map datum. Map datum should be changed to whatever datum the map in use is based on. Most UK maps are based on the 'OrdSrvy GB' datum; Greek maps used to be based to HATT, and lately to the recently introduced 'Hellenic Geodetic Reference System 87' projection system (HGRS87) (for map datums see Brawn 2003:35, 69, for HATT and HGRS87 see chapter 4.3.2). GPS readings for this thesis were taken in WSG84, since my GARMIN GPS III did not support HATT or HGRS87, and taking into account the fact that most GPS users do not usually change their default GPS' map datum. Data were later converted to HGRS87 (see chapter 4.3.3.3).

Measurements were taken in the format of Degrees and decimal degrees (D.d) and were also broken down into Degrees, Minutes and decimal minutes (DM.m) and then into Degrees, Minutes and Seconds (DMS). The formula used follows the equations M.m = .d x 60, and S = .m x 60. DMS measurements were also converted to Universal Transverse Mercator (UTM) coordinates, in order to achieve compatibility with the UTM coordinates from the Preveza nomos presented by Tartaton 1996. All relevant steps and processes are described in Appendix II. It must be noted that the topographic maps of the Hellenic Army Geographical Service are in the process of being converted from the HATT projection to the HGRS87. The digital map created as part of this thesis (chapter 4.3, see also CD-ROM in Appendix IV and map 1) offers data in WSG84 and HGRS87 projections.

(e) Elevation: All measurements were taken by the hand-held Global

Positioning Station (GARMIN GPSIII) mentioned above. In general, all elevation data are referenced to mean annual sea levels. The unit of measurement is the metre above sea level (masl). Sea levels, of course, are not constant all over the world and therefore are cannot be very precise. A difference of up to 16 metres has been noted after checking, which involved comparison of the unit's figures with set points offered by the Hellenic Army Geographic Service, to the extent that the latter's accuracy can be guaranteed. I have also cross checked the unit's performance with elevations of the Zoara / Ghor es-Zafi project in Jordan (Politis 2002: 5-6 and http://www.hsnes.com/zoara.htm , last visited 20/09/2004, for a brief overview) and the Stavros Valley Survey in Ithaka, Greece (Whitley 2002/2003a: 42-44, for a preliminary report). Results and comparisons will be presented elsewhere.

B. Demoi and Koinotites

The territory of the Ioannina nomos has recently been divided in 28 demoi and 13 koinotites (see above chapter 1.5.1). Demoi and koinotites form the second level of administration for archaeological sites, following the Ephorates of Antiquities. The demos or the koinotita to which a site belongs is mentioned. For densities of sites in demoi and koinotites see table 3.2.3.2Ba:

Table 3.2.3.2Ba: Densities of late prehistoric sites in districts and demoi / koinotites

District	Demoi/ koinotites	Late Prehistoric Sites
Konitsa (41 modern towns and villages)	Aetomilitsis (K)	-
	Distrato (K)	Distrato (#1) **[1 site]**
	Fourkas (K)	-
	Konitsa	Iliorachi (#2), Kallithea/Megali Goritsa (#3), Kleidonia (#4), Konitsa School of Agriculture (#5), Liatovouni (#6), Mesogephyra (#7), Palaiogoritsa (#8), West Slopes of Aoos – Voidomatis Valley (#9) **[8 sites]**
	Mastorochorion	-
Pogoni (34 modern towns and villages)	Ano Pogoniou	Kephalovryso (#10), Lachanokastro (#12), Meropi (#13) **[3 sites]**
	Delvinakiou	Ktismata (#11), Stavrodromi (#15), Vissani (#16), Zeravina (#17) **[4 sites]**
	Pogonianis (K)	Panayia Pogonianis (#14) **[1 site]**

Table 3.2.3.2Ba (cont.): Densities of late prehistoric sites in districts and demoi / koinotites

District	Demoi/ koinotites	Late Prehistoric Sites
Zagori - Kalpaki (40 modern towns and villages)	Tymfis	-
	Anatolikou Zagoriou	Greveniti (#20), Tristeno (#24) **[2 sites]**
	Kentrikou Zagoriou	Aristi (#18), Elaphotopos/Kalyvia Elaphotopou (#19), Kato Pedina (#23) **[3 sites]**
	Kalpakiou	Kakousioi (#21), Kalpaki (#22) **[2 sites]**
	Egnatias	-
	Papigkou (K)	-
Ioannina-Dodoni (65 modern towns and villages)	Passaronos	Ayioi Anargyroi (#25), Kato Lapsista (#30), Passarona / Gardiki (#36), Rodotopi (#39), Tsergiani (#42) **[5 sites]**
	Peramatos	Drabatova / Amphithea (#27), Krya (#31), Lykotrichi (#33), Perama (#38), Sentenikos (#40) **[5 sites]**
	Pamvotidos	Kastritsa (#29), Koutselio (#32) **[2 sites]**
	Bizaniou	Neokaisareia (#35), Pedini / Ayioi Apostoloi (#37) **[2 sites]**
	Anatolis	-
	Dodonis	Dodoni (#43) **[1 site]**
	Ioanniton	Dourouti (#26), Neochoropoulo (#34), Stavraki (#41) **[3 sites]**
	Nisou Ioanninon(K)	Ioannina Island (#28) **[1 site]**
West Pindos - Arachthos (43 modern towns and villages)	Metsovou	Anthochori (#44), Metsovo (#45) **[2 sites]**
	Tzoumerkon	Vaxia (#47) **[1 site]**
	Katsanochorion	-
	Pramanton	Pramanta (#46) **[1 site]**
	Mileas (K)	-
	Vathypedou (K)	-
	Syrakou (K)	-
	Kalariton (K)	-
	Matsoukou (K)	-
	Vovousis (K)	Vovousa (#48) **[1 site]**
Upper Louros – Upper Acheron (40 modern towns and villages)	Agiou Demetriou	Kopani (#51), Pesta Sklivanis (#52), Terono (#54), Theriakision (#55) **[3 sites]**
	Dervizianon	Georgani (#49), Romano (#53), Toskesi-Achladea (#56) **[3 sites]**
	Sellon	Katamachi (#50), Sistrounio (#57) **[2 sites]**
Upper Kalamas (44 modern towns and villages)	Molosson	Despotiko (#58), Vereniki (#61), Zalongo (#62) **[3 sites]**
	Ano Kalamas	Gribiani (#59), Mazaraki (#60) **[2 sites]**
	Ekalis	-
	Zitsas	-
	Eurymenon	-
	Lavdanis (K)	-

According to the table above most of the demoi and/or koinotites have 1 – 3 late prehistoric sites. The demos Konitsis, with 8 sites, currently has the highest site frequency. Future archaeological research and publications will alter this picture. It should also be noted that Meropi (site # 13) is recorded here as one large site; the site's full publication is expected to bring to light more sites from the Meropi area.

C. Area (description and accessibility)

A very brief description of the geography of the area around the site is offered. Continuous reference to the geography of the Ioannina nomos (chapter 1.4) and the introductory comments on the geography and hydrology of every district, found within the gazetteer just before the entries for each district, is assumed.

Subsistence resources are occasionally considered here and include land (for cultivation, grazing, hunting, wood and/or minerals), water (sea, rivers, lakes, springs) and trade (access to land trade routes, suitability for short and long scale trade). Reference is also made to specific landscape attributes, such as individual lakes, rivers, upland and lowland zones, that have been approached above (chapter 1.4). It must be stressed that accessibility to subsistence resources does not necessarily mean extensive use of them, something which would need to be confirmed by the archaeological record, and cannot at present be done, but is a future target as the record expands.

In terms of accessibility, brief directions are given from the capital of the demos or the koinotita to the site. Information is derived from the Road editions 1:250,000 map of *Epiros / Thessaly* (ISBN: 960-8481-17-1).

3.2.3.3 Archaeology

This section of the gazetteer is an attempt to summarise the archaeological record for every entry. Sources of information are bibliographical searches, research in the archives of the IB Ephorate of Prehistoric and Classical Antiquities and the storage rooms of the Museum of Ioannina for published and unpublished material, personal visits to the sites and personal post-excavation work in some cases (e.g. Krya, site # 31, and Liatovouni, site # 6).

Each class is presented with brief commentary in the following pages, in order of appearance in the gazetteer in chapter 3.3. An attempt is made to define and discuss certain archaeologically significant emerging patterns, correlations and interactions. It should be emphasised, however, that to further and fully reveal aspects of the nature of Late Prehistoric cultures attested in the area, it will be necessary to consider sites in the

Ioannina nomos together with relevant sites and evidence from the neighbouring nomoi of Epirus (Thesprotia, Preveza, and Arta nomoi) and Western Macedonia (Trikala, Grevena, Kozani and Kastoria nomoi), as well as with sites in southern Albania.

Simplified maps into the tables of this chapter have taken into account GPS readings mentioned above (chapter 3.2.3.2A). For more accurate projections, see map 1 in the pocket at the end of the thesis. For digital data, see Appendix IV (CD-ROM).

A. Degree of Work

Degree of work refers to the nature and extent of research that has produced the archaeological information from a given site and summarises the extent of our knowledge in relation to it. Site reconnaissance for all periods has largely been limited to forays by single individuals (e.g. Hammond 1967 for Epirus and Macedonia) or small groups, and in fact many of the sites were discovered by local residents during construction and other activities, and reported to the archaeological authorities. All such sites have been recorded as chance find(s). Where systematic and/or rescue work has taken place, the site is registered as partly / fully excavated, surveyed and/or ongoing project. However, it must be stressed that fully excavated does not necessarily mean fully published. Full publications will hopefully provide further evidence to be included at a later phase/update of the present gazetteer.

The table below offers summary statistics:

Table 3.2.3.3Aa: Degree of work in the Ioannina nomos districts

DISTRICTS (number of sites)	**Chance finds** site count (%)	**Rescue excavation** site count (%)	**Long-term excavation** site count (%)
Konitsa (9)	7 (78%)	1 (11%)	1 (11%)
Pogoni (8)	7 (88%)	0	1 (13%)
Zagori - Kalpaki (7)	5 (71%)	2 (29%)	0
Ioannina-Dodoni (19)	15 (79%)	1 (5%)	3 (16%)
West Pindos - Arachthos (5)	5 (100%)	0	0
Upper Louros – Upper Acheron (9)	9 (100%)	0	0
Upper Kalamas (5)	4 (80%)	1 (20%)	0
TOTAL SITES (62)	**52 (84%)**	**5 (8%)**	**5 (8%)**

According to these figures, 84% of Late Prehistoric locations in the Ioannina nomos are known from chance finds, while excavation works (rescue and/or long-term) have been undertaken at just 10 sites (16%).

The two districts forming the mountainous south eastern part of the Ioannina nomos (West Pindos - Arachthos and Upper Louros – Upper Acheron) are known just from chance finds. The Upper Kalamas distinct to the south west and Zagori-Kalpaki in

the centre of the region are known from chance finds plus rescue excavations at the burial sites of Mazaraki (site # 60), Elaphotopos (site # 19) and Kalpaki (site # 22).

Three districts have benefited from long-term excavations, and discoveries there have been significant. In the Konitsa district excavations at the site of Liatovouni (site # 6). just north of the confluence of the Voidomates and Aoos rivers, revealed a settlement and a cemetery. In the Pogoni district just north of the Gormos river, the Meropi project (site # 13) revealed a series of settlements, houses, fortification walls, a pottery kiln and an amber workshop. In the Ioannina plateau, excavations revealed houses and burials at the sites of Kastritsa (site # 29) and Krya (site # 31), located north (Krya) and south-east (Kastritsa) of the lake of Ioannina respectively. Remains of Late Prehistoric huts have been excavated at Dodoni (site # 43). Unfortunately, no clear-cut stratigraphic sequences are yet available, something that it is hoped will change when full publications of Meropi and Liatovouni come out. No systematic surface survey, similar to the Nikopolis Project in the Preveza nomos (Wiseman & Zachos 2003), has taken place, excluding of course the impressive efforts of individual researchers (Hammond 1967; Wardle 1972; Andreou 1994). Archaeological knowledge and interpretation is therefore currently based on chance finds from 52 locations and excavation work from 10 locations, 3 of which comprise ongoing projects (Meropi # 13, Liatovouni # 6, Dodoni # 43).

The above statistics do not allow secure estimates of the possible size of the sites, and for this reason there is as yet no data field for size in the gazetteer. Excavation is still in progress at the long-term excavated sites, and it is expected that, in the near future, excavation will be carried out at a number of the sites known today by chance finds only.

It should be mentioned at this point that all rescue and long-term excavation has been undertaken by the 12th Ephorate of Prehistoric and Classical Antiquities, thanks to the efforts and initiatives of the Ephors themselves and the permanent and temporary staff. Universities and other institutions have not yet been extensively involved. Only Dodoni (site # 43) is being excavated by a team from the University of Ioannina, a project that passed to the University when Dakaris, former Ephor of Antiquities, became Professor of Classical Archaeology there. More involvement and more projects, both surveys and excavations, will undoubtedly provide more information.

In view of this information, let us proceed to consider architectural remains, burials, and portable finds.

B. Architecture and Burials

Tables 3.2.3.3Ba, and 3.2.3.3Bb below summarise the presence of Late Prehistoric architectural and burial evidence in the districts of the Ioannina nomos:

Table 3.2.3.3Ba: Sites with architectural remains and burials in the Ioannina nomos districts

DISTRICTS (number of sites)	**Architecture** site count (%)	**Burials** site count (%)	**Tumulus burials** site count (%)
Konitsa (9)	4 (44%)	3 (33%)	0
Pogoni (8)	2 (25%)	5 (63%)	2 (25 %)
Zagori - Kalpaki (7)	1 (14%)	4 (57%)	0
Ioannina-Dodoni (19)	5 (26%)	6 (32%)	0
West Pindos (5)	1 (20%)	1 (20%)	0
Upper Louros – Upper Acheron (9)	1 (11%)	4 (44%)	1 (11 %)
Upper Kalamas (5)	1 (20%)	3 (60%)	0
TOTAL SITES (62)	**15 (24%)**	**26 (42%)**	**2 (3%)**

Table 3.2.3.3Bb:
Locations of Late Prehistoric sites with architectural remains and sites with burials in the Ioannina nomos districts

Sites with architectural remains

Sites with burials

Architecture (see tables 3.2.2a, 3.2.3.3Ba and 3.2.3.3Bb, left part):

Late Prehistoric architectural remains have been noted at 15 sites in the Ioannina nomos (24% of the sites, although it is hard to comment on the significance of this proportion since most are chance finds). To the extent that these remains represent settlements (a plausible assumption, but again noting the uncertainties surrounding chance finds), I would propose their classification into river valley sites, lake/plateau sites and highland sites.

The best example of river valley sites is the cluster in the Konitsa district, around the confluence of the Aoos and Voidomatis rivers. Here four sites have produced Late Prehistoric architectural evidence (namely Konitsa School of Agriculture (# 5), Liatovouni (# 6), Mesogephyra (# 7), and Paliogoritsa (# 8)). I would also put into this group Aristi (# 18), in the Zagori-Kalpaki district immediately to the south, since it lies a few kilometres south of the confluence and just west of the Voidomatis river. Excavation works of the ongoing Liatovouni (# 6) project revealed structures including curvilinear house walls, floor levels, remains of hearths, a child burial below a floor, and a possible street (see also chapter 2.2.5.1), all of which point towards an organised settlement for permanent or semi-permanent habitation. Similar house walls are reported from the other sites with architectural remains, and the existence of similar settlements is a strong possibility. This is also supported by the presence of burials at all sites except the Konitsa School of Agriculture (# 5).

The exploitable resources of the area (the fertile plain of Konitsa, springs, forests and pasture lands) as well as the area's strategic location (between the Aoos plain of south-western Albania, the Korça plain in south-eastern Albania, and the Ioannina plateau to the south) could justify and support the existence of permanent and/or semi-permanent settlements in the area. The importance of the area as a region controlling passage and trade routes to and from the Ioannina plateau and modern Albania would give good reason for the existence of fortification walls, so far only reported at Mesogephyra (# 7). I was not able to locate the Mesogephyra walls, but this may have been due to the dense vegetation that nowadays covers the area.

The existence of burials (cist graves) at the sites of Liatovouni (#6), Mesogephyra (#7) and Palaiogoritsa (# 8) points towards settlements with associated burials. The discovery of weapons in the burials of the area (Liatovouni (#6) and Mesogephyra (#7) may indicate warfare as an aspect of personal status (see below), and together with pottery of the Epirus 2 and 4 classes, influences from, and contacts with, the North and South can be claimed (see chapters 2.3.4, 2.3.6 and 2.3.7). Further work

is expected to shed light on the size, the function(s), the significance, and the routines of these and other settlements.

The sites of Kephalovryso (# 10) and Meropi (# 13) in the Pogoni district are also connected to a river, the Gormos. Similarities with the Konitsa district sites relate to the existence of a river, many springs ('Kephalovryso' in modern Greek means 'point of most springs'), forests and pasture lands. Kephalovryso (# 10) is known from reported chance finds (house walls, tumulus burials, Epirus 1a pottery), but Meropi (# 13) has been excavated systematically. Permanent habitation can be assumed for Meropi, given the reported quantity and nature of architectural evidence: many house walls, stone wall foundations, even a pottery kiln and an amber processing unit. The Late Prehistoric evidence from the Pogoni district seem very similar to that of the Konitsa district presented above, especially in terms of house walls and portable finds, but there is a significant difference: in the Pogoni district we have tumulus burials (many tumuli have been reported, eight have been excavated), while in the Konitsa district (and the rest of the Ioannina nomos) we have cist graves, either isolated or in small groups. These tumuli link the Pogoni district with modern southern Albania. In terms of portable finds, links can be found with the Balkans and Southern Greece (Epirus 1-4 pottery, bronze weapons and implements). Once again, full publication of the excavations and finds will hopefully provide a clearer picture.

Another river valley site with architectural remains is Mazaraki (# 60) in the Upper Kalamas district, where 3 cist graves have been excavated and the associated remains of building foundations reported. Mazaraki is expected to be a settlement similar in character to sites in the Konitsa district (river, springs, forests, building foundations, cist graves, Epirus 1 and 4 pottery, bronze weapons and implements).

Turning to the second category, lake / plateau sites are expected to comprise settlements taking full advantage of the ecosystem of a lake district, such as the Ioannina plateau.

The Ioannina plateau connects highlands and lowland zones, and it has always been of major importance in mainland Epirus in terms of movements of people, animals and goods. It is a good and convenient meeting point: people and herds of animals can spend both winter and summer there, and resources to support large groups are abundant. Under this spectrum, it is not surprising that most sites in the Ioannina nomos are found in the Ioannina plateau (19 sites, 31%).

Architectural remains are known from five sites[2] surrounding the lake of Ioannina. Burials are reported in the first three. Again, the area favours permanent and/or semi-permanent habitation. All these sites are characterised by evidence for circular and/or rectangular walls and/or huts, and possible city walls are reported in one case (Neokaisareia, # 35). No monumental architecture / fortifications, similar to that discovered at Ephyra in the Thesprotia nomos (see Papadopoulos, Th., all references). has been so far noted in the Ioannina nomos. I envisage settlements in the Ioannina plateau a permanent in character, although with varying population density within a year, according to environmental, climatic, political and social realities. Portable finds (pottery of the Epirus 2-4 classes, bronze weapons and other finds) indicate connections both to North and South.

Highland sites with architectural remains are Vovousa (# 48) in West Pindos and Theriakisio (# 55) in Upper Arachthos. Not much further commentary can be offered at the moment, since reported remains have received only very brief mention in print (Andreou 1994: 240 and 241 respectively). These architectural remains are reported together with Epirus 1a pottery. Of special interest, however, is a reference to possible remains of tumuli at Theriakisio (# 55) discussed below.

For an overview of Late Prehistoric architecture in Epirus see Papadopoulos 1990.

Burials (see tables 3.2.2a, 3.2.3.3Ba and 3.2.3.3Bb, right part):

Burials are present at almost half of the sites in the Ioannina nomos (26 sites, 42%). They take the form of cist graves, with the exception of 3 sites (Kephalovryso #10, Meropi #13 and Theriakisio #55) where tumuli have been noted. Almost half of the sites with burials have also produced Late Prehistoric architectural remains (11 sites, 42%, see above for details), and, given the chance-find character of most sites, it would not be surprising if future research reveal architectural remains in the vicinity of the remainder. All burials include Late Prehistoric pottery, mainly of the Epirus 1a and 1b classes. Exceptions are the burials at Panagia Pogonianis (# 14), Despotiko (# 58) and Gribiani (# 59), the first two of which contain bronze offerings and the last a stone axe. At 14 sites[3], burials include bronze finds, mainly weapons (swords, daggers and/or

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[2] namely at Ayioi Anargyroi (# 25), Krya (# 31), Neochoropoulo (site # 34), Neokaisareia (# 35), and Dodoni (# 43) further south.

[3] Namely at Liatovouni (site # 6), Mesogephyra (site # 7), Meropi (site # 13), Elaphotopos (site # 19), Kalpaki (site # 22), Kato Pedina (site # 23), Kastritsa (site # 29), Krya (site # 31), Pedini / Ayioi Apostoloi (site # 37), Anthochori (site # 44), Romano (site # 53), Despotiko (site # 58), Gribiani (site # 59), and Mazaraki (site # 60).

spear-heads). Lithic artefacts have been discovered in 5 of these burials.[4]. In the cist grave unearthed at Aristi (site # 18), lithic artefacts have been discovered without bronze finds.

It seems that simple cist graves were widely adopted all over the Ioannina nomos, and this may be an indication of uniform, common, interrelated cultural patterns and/or processes throughout the area. The deceased (inhumations, usually 1-3 in number) were accompanied by grave goods in the form of pottery, weapons and other implements. Grave goods may have indicated social status and power, but evidence is still not enough (both in terms of the number of graves and the quantity of offerings so far known) for such a hypothesis to be firmly supported via quantification. Final publications exist only for the Elaphotopos (site # 19) and the Kalpaki (site # 22) burials, while only preliminary reports are available for the tumuli at Meropi (site # 13); for the rest of the burials there are just short mentions. Certain finds are datable (usually bronze swords and daggers of a LHIIIB-C date), and provide evidence of contacts with the North and the South. No burial monuments (such as the tholos at Kiperi in the Thesprotia nomos, see Papadopoulos 1981b) have so far been noted in the Ioannina nomos.

The tumuli of Meropi (# 13) and Kephalovryso (# 10) may suggest a different sphere of influence, with possible implications for social life and routines, and probably stronger incfluence from northern traditions and customs. This remains hypothetical until further work is undertaken and/or final publications appear. Individual cist graves within the tumuli, although simpler in construction in comparison with those found as individual burials, are no different in terms of grave goods. It must also be noted at this point that tumuli have been reported both at Theriakisio (# 55) in the Ioannina nomos, and at Ephyra in the Thesprotia nomos (Papadopoulos 1987d), indicating a Late Prehistoric Epirote burial custom not exclusive to the Pogoni district.

Note that the Greek term κιβωτιόσχημος τάφος is translated in the gazetteer as cist grave. In the bibliography it may also appear as 'box-shaped' grave (eg. Andreou 1982b: 60). For Prehistoric cist tombs in Epirus, see Papadopoulos 1987d and Lagkari-Kosti 1999.

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[4] namely at Meropi (site # 13), Elaphotopos (site # 19), Kalpaki (site # 22), Krya (site # 31), and Mazaraki (site # 60).

C. Pottery

Part II of this thesis was dedicated to the ceramic record from the Ioannina nomos, addressing and discussing old and new pottery classification schemes (chapters 2.2) as well as offering a merged pottery typology, the Epirus typology (chapters 2.3 and 2.4, especially chapter 2.4.4). Characteristics, distributions, and influences have already been discussed there. Following this proposal, Late Prehistoric pottery from the Ioannina nomos can be classified according to the following general categories: handmade local wares (Epirus 1a, Epirus 1b, Epirus 1c classes, see chapters 2.3.1, 2.3.2, and 2.3.3), which are the most important (and in many cases the only) part of the archaeological record; matt painted wares (Epirus 2 class, see chapter 2.3.4); orange-red wares (Epirus 3 class, see chapter 2.3.5); and Mycenaean inspired wares, including local and/or imported imitation Mycenaean vessels (Epirus 4 class, see chapter 2.3.6). The table 3.2.3.3Ca below summarises the relevant frequencies and occurrences:

Table 3.2.3.3Ca: Sites with pottery in the Ioannina nomos districts

DISTRICTS (total number of sites)	**Epirus 1a, 1b, 1c** site count (%)	**Epirus 2** site count (%)	**Epirus 3** site count (%)	**Epirus 4** site count (%)
Konitsa (9)	9 (100%)	1 (11%)	1 (11%)	1 (11%)
Pogoni (8)	4 (50%)	1 (13%)	1 (13%)	1 (13%)
Zagori - Kalpaki (7)	4 (57%)	1 (14%)	1 (14%)	1 (14%)
Ioannina-Dodoni (19)	18 (95%)	4 (21%)	3 (16%)	4 (21%)
West Pindos - Arachthos (5)	4 (80%)	0	0	0
Upper Louros/ Upper Acheron (9)	6 (67%)	0	0	0
Upper Kalamas (5)	2 (40%)	0	0	1 (20%)
TOTAL SITES (62)	**47 (76%)**	**7 (11%)**	**6 (10%)**	**8 (13%)**

Table 3.2.3.3Cb (left part) below shows the location of all Late Prehistoric sites in the Ioannina nomos that have produced pottery. The local handmade wares of the Epirus 1a, 1b and 1c classes dominate the Ioannina nomos, since they appear in 76% of the sites. It is worth mentioning that all sites with pottery included Epirus 1a. Other wares are not very well represented, and this may be due to the fact that most sites are represented by chance-finds (see table 3.2.3.3Aa above). Only five sites have been excavated systematically, and all of these (Liatovouni (site # 6), Meropi (site # 13), Kastritsa (site # 29), Krya (site # 31), and Dodoni (site # 43)) have produced pottery from all classes. Apart from these five sites, Epirus 2 has been discovered at Kato Pedina (site # 23) and Koutselio (site # 32); Epirus 3 has been found at Elaphotopos (site # 19); and Epirus 4 has been noted at Aristi (site # 18), Neochoropoulo (site # 34),

and Mazaraki (site # 60). There is no obvious geographical patterning behind the distribution of these categories, but this may well be a product of the nature of research to date.

Table 3.2.3.3Cb:
Locations of Late Prehistoric sites with pottery and sites with bronze finds in the Ioannina nomos districts

Sites with pottery

Sites with bronze finds

Late Prehistoric architectural remains and burials are always accompanied by pottery (exceptions are the Panagia Pogonianis (site # 14), Despotiko (site # 58) and Gribiani (site # 59) burials, see chapter 3.2.3.3B above). More on Late Prehistoric pottery classes, together with their characteristics and distribution patterns inside and outside the Ioannina nomos can be found in chapters 2.3 and 2.4, and especially in chapter 2.4.4. For the relationships between pottery and bronzes, lithic and other finds, see chapter 3.2.3.3C below.

D. Bronze, Lithic and Other finds

Table 3.2.3.3Da: Sites with bronze, lithic and other finds in the Ioannina nomos districts			
DISTRICTS (total number of sites)	**Bronze** site count (%)	**Lithic** site count (%)	**Other** site count (%)
Konitsa (9)	3 (33%)	2 (20%)	1 (11%)
Pogoni (8)	2 (25%)	1 (12.5%)	4 (50%)
Zagori - Kalpaki (7)	4 (57%)	4 (57%)	2 (29%)
Ioannina-Dodoni (19)	7 (37%)	3 (16%)	4 (21%)
West Pindos - Arachthos (5)	3 (60%)	2 (40%)	0 (0%)
Upper Louros/Upper Acheron (9)	4 (44%)	3 (33%)	2 (22%)
Upper Kalamas (5)	4 (80%)	1 (20%)	1 (20%)
TOTAL SITES (62)	**28 (45%)**	**16 (26%)**	**14 (23%)**

Bronze and lithic finds from Epirus have a contrasting research history. The former have been studied extensively and systematically, since they offer good grounds for valid hypotheses and conclusions related to chronology, based upon stylistic characteristics and comparanda (Soueref 2001 offers the latest overview of bronze artefacts for Late Prehistoric Epirus, with all related references). By contrast, the study of lithic artefacts has focused only upon the Palaeolithic (Adam 1989; Bailey 1997; Papagianni 2000; van Andel & Runnels 2003; Runnels et al. 2003), with only a few examples referring to Bronze Age (Tartaron et al. 1999; Kourtessi-Philippakis 2002; Tartaron in press chapter 6). Analysis and discussion of bronze and lithic artefacts is beyond the scope of the present research. I merely note here the following observations:

Bronze finds: Almost half of the sites in the Ioannina nomos (45%), spread across all distrcts, have produced Late Prehistoric bronzes. In 14 cases, bronzes have been found as grave goods (see chapter 3.2.3.3B above) and in 5 cases[5] they occurred together with architectural remains. Architecture and burials with bronze finds appear in 5 cases[6]. Bronzes are usually discovered together with pottery, but 5 sites[7] are known just by the presence of bronze implements, while in Katamachi (site # 50) only bronze and lithics have been discovered.

Bronze finds are mostly weapons (swords, daggers and/or spear-heads). In burials, they may indicate the practical and/or ideological role of warfare in (almost certainly male) status display. Their date forms in most cases a terminus postquem rather than an absolute chronological base for their context (usually a burial), since it

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[5] namely at Konitsa School of Agriculture (site # 5), Liatovouni (site # 6), Meropi (site # 13), Krya (site # 31), Dodoni (site # 43).

[6] namely at Liatovouni (site # 6), Mesogephyra (site # 7), Meropi (site # 13), Krya (site # 31), and Mazaraki (site # 60).

[7] namely the sites of Zeravina (site # 17), Kakousioi (site # 21), Tsergiani (site # 42), and Vereniki (site # 61).

should be taken into account that they may have remained in circulation or as valued possessions for long periods of time.

Lithic finds: Lithic artefacts are present at 26% of the Late Prehistoric sites of the Ioannina nomos. Here too, the significance of this proportion is hard to assess. Setting aside the chance-find character of most sites (see table 3.2.3.3Aa above), an importnt factor may be the limited number of comparative studies, and therefore a lack of experience and practical skill in recognising these artefacts. With the exception of 4 sites[8]., wherever lithics have been noted, they occur together with pottery. Lithic finds consist of tools (axes, pickaxes, chisels, hammers) and beads (amber, chalcedony, rock crystal), providing insights into everyday life and activities. Beads are largely concentrated at Merope, but this may be an accident of research, and it must be emphasized that evidence is not enough to allow valid classification patterns of distributions. Lihics have, however, been discovered in all districts throughout the Ioannina nomos.

Table 3.2.3.3Db:
Locations of Late Prehistoric sites with lithic and sites with 'other' finds in the Ioannina nomos

Sites with lithic finds

Sites with 'other' finds
(no pottery, bronze or lithic)

[8] namely at Greveniti (site # 20), Metsovo (site # 45), Georgani (site # 49), and Katamachi (site # 50).

Other finds: Other finds are mostly iron spear-heads. At Meropi (site # 13) and Kalpaki (site # 22) loom weights have been discovered, indicating weaving activities. At Meropi (site # 13) sheep, goat and cattle bones have been reported. No reports are available in terms of organic material and relevant samples. Again, this is a gap to be filled by future excavation works and appropriate studies.

E. Chronology

The chronological limits of this research have been presented and discussed above (chapters 1.2.1, 2.3.1 and 2.3.7), favouring a post-Doliana – pre-Vitsa terminus postquem and antequem respectively, with the Epirus 1a class dominating and the Epirus 3 class coming at the end of the late Bronze Age and into the Early Iron Age. In the Gazetteer, the term 'Late Prehistory' is commonly used. Where individual finds have been more securely dated, their date has been added in parenthesis.

2.2.3.4 Bibliography

All references are listed in the Bibliography, and further abbreviations have been avoided. In order to enhance the data field's practicality, bibliographical references in the gazetteer are presented in chronological order.

Additionally note that:

a) Tartaron (1996), refers to Zachos 1997 as 'Zachos in press'.

b) Tartaron 1996 (unpublished PhD thesis) will be published within the year 2004 in the BAR series, and is referred as Tartaron in press. Thanks to Prof. Tartaron's kind permission and much appreciated help, I have read both his PhD thesis and the final pre-publication version of the book in press. References in the Gazetteer are to Tartaron 1996, but they are updated to take account of Tartaron in press, and will be changed formally in later versions of the Gazetteer as soon as this publication appears.

2.2.3.5 Plates

Every district has a topographical and geographical reference plate and all sites are accompanied by one or more finds-plate(s) (if drawings and/or pictures were published and/or available with relevant permissions), the aim being to form a concise catalogue of the late prehistoric material from the Ioannina nomos. The exploitable, expandable and electronic character of the gazetteer will require pictures, drawings and

other visual data to be added in the future.

Plates and text form an inseparable interconnected unity. Continuous reference to the plates is supposed. Every site would therefore be expected to go together with two plates: one for its location (the district's plate), and one for its archaeological record. Captions comprise a brief title as well as the source of all drawings and photographs, unless they are mine.

2.2.3.6 Discussion

The discussion data of field is relatively brief, and descriptive and clarifying in character rather than analytical and expansive, based upon facts rather than interpretation and analysis.

3.3. The Gazetteer

For every district, site entries follow a brief introduction on the district's main attributes in terms of position, geography and hydrology, communication networks and sub-districts.

For sites' position see also map 1 as well as the GIS presented in chapter 4.3 and offered in the CD-ROM in the pocket at the end of this thesis.

This Gazetter is also offered as a digital entity in the form of a website (the LPIN website, see chapter 4.2) and as a Microsoft access database (ioannina.mdb, see CD-ROM in the pocket at the end of this thesis).

(see next page)

3.3.1. The Konitsa District (pl. 12)

The Konitsa district forms the northern part of the Ioannina nomos. Neighbouring districts are western Macedonia to the east and north-east (nomoi of Kastoria, Kozani and Grevena), Albania and the Pogoni district to the west, and the Zagori - Kalpaki district of the Ioannina nomos to the south (pl. 11a, 12). The Konitsa district consists of two demoi (Mastorochorion and Konitsas) and three koinotites (Aetomilitsis, Fourkas and Distratou) that nowadays host 41 towns and villages (Nitsiakos et al: 1998: 41). Nine findspots with late prehistoric evidence have been spotted.

Geography - Hydrology: The main geographical characteristic is the great difference in the altitude between the district's high mountains (up to 2637 masl in the case of the Smolikas peak) and the Konitsa plain (just 500 masl). The northern part of the district displays the highest average altitude of all Greece, illustrated by the Grammos mountains to the north, the Smolikas mountains to the east, the Gkamila/Tymfi mountains to the south and the Nemertsika mountains to the west. The waters of the rivers Sarantaporos and Aoos, torrents, springs and tributaries, comprise another major geographical feature. Late prehistoric activity is focussed in Konitsa's limited lowland zones: the low hills of the Konitsa and the Merzani area, where the Sarantaporos and Aoos rivers meet (pl. 2).

Communication networks: Nowadays Konitsa communicates with the rest of Epirus and western Macedonia through the Ioannina – Konitsa – Kozani motorway. Older paths are not in use anymore and have been abandoned. Communication with other areas used to be achieved through the high saddles of Kameniç (west), Grammos (north), Pentalofos, Fourka and Smixi (east) and Kleidonia (south). Only in the Merzani area is there a lowland crossing to Albania. The Konitsa district has to be seen as the area connecting Epirus and Southern Greece with the Balkans and Albania, especially the Drin Valley to the west (through Pogoni) and the Korça (Κορυτσά) Plain to the north. Modern political, economical and transport development have significantly altered the character of the Konitsa district. Politically and economically, the location of the Konitsa district in relation to the Greek border with Albania, inaccessible and unapproachable until recently, led to the area's isolation and abandonment. For communication networks in the Konitsa district see Nitsiakos et al. 1998: 145-148.

Sub-districts: Four sub-districts can be distinguished: 1) the Sarantaporos valley to the north, 2) the Aoos valley to the east, 3) the plain of Konitsa to the south and 4) the Alpine zone.

Areas of Late Prehistoric activity: Archaeological research has revealed evidence of Late Prehistoric human presence and activity in the 9 areas presented below in alphabetical order. In 8 out of 9 locations information derives from chance and/or surface survey finds. Systematic work, still not fully published, has been conducted in the area of the Liatovouni Hill (see chapters 2.2.4 and 2.2.5 above).

1. **Distrato** (also: Dhistraton, Δίστρατο)

Topography

• Map reference (GPS):

Degrees : 40.02611111 N / 21.01611111 E

DMS: 40° 1' 34 N / 21° 0' 58 E

UTM: Northing: 4430655.5 ,

Easting: 501374.75 , Zone: 34T

[reading in Distrato village].

Elevation: 1224 masl.

• Koinotita: Distratou.

• Area (description): The area of Distrato, just north of the Aoos river, is within dense woodland and water springs. Only the Aoos valley offers an agricultural alternative.

• Accessibility: Distrato is the capital of the koinotita Distratou.

Archaeology

• Degree of work: chance find.

• Architecture: -

• Burials: -

• Pottery: possible prehistoric pottery sherds.

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Hammond 1967: 303, fig. 10j; Wardle 1972: 283; Papadopoulos 1976; Tartaron 1996: 61, 454.

Plate: 13a.

Discussion:

Hammond reported he has seen pottery that 'seemed to be' prehistoric. There are no finds from Distrato in the Museum of Ioannina and I did not spot any surface pottery on my visit to the area in summer 2002.

2. **Iliorachi** (also: Iliorrachi, Ηλιοράχη, Ηλιορράχη, θέση Μπίχλη, θέση Αγία Τριάδα)

Topography

• Map reference (GPS):

Degrees: 40.05611111 N / 20.70499999 E

DMS: 40° 3' 22 N / 20° 42' 18 E

UTM: : Northing: 4434223.0

Easting: 560129.56 Zone: 34T

Elevation: 449 masl.

• Demos: Konitsas.

• Area (description): The village of Iliorachi is a typical Konitsa settlement north of the Aoos river.

• Accessibility: 5km west of Konitsa (the capital of the demos Konitsas).

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: -

• Pottery: pottery sherds with plastic decoration (Epirus 1a).

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Douzougli 1996: 27-28, 61, fig. 3: γ, ε, η.

Plate: 13b-d.

Discussion:

Prehistoric pottery sherds from the areas of Bichli and Ayia Triada among other finds were delivered to the museum of Ioannina by local inhabitants.

3. Kallithea/Megali Goritsa

(also: Goritsa, Megali Goritsa, Καλλιθέα, Γορίτσα, Μεγάλη Γορίτσα, Άγιος Αθανάσιος, Άγιος Κωνσταντίνος)

Topography

• Map reference (GPS):

Degrees: 40.08611111 N / 20.68916666 E

DMS: 40° 5' 10 N / 20° 41' 21 E

UTM: Northing: 4437361.5 ,

Easting: 473500.72 , Zone: 34T

Elevation: 592 masl.

• Demos: Konitsas.

• Area (description): Kallithea / Megali Goritsa lies in the valley / plain between the Aoos and the Voidomatis rivers, just before their confluence. The area is very fertile and extensively cultivated.

• Accessibility: 6km south-west of Konitsa (the capital of the demos Konitsas).

Archaeology

• Degree of work: chance finds from surface survey.

• Architecture: -

• Burials: -

• Pottery: local handmade pottery sherds with plastic decoration from large vessels (Epirus 1a).

• Lithic: tools.

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Douzougli 1996: 34-35, 61, pl. 3.

Plate: 14a-f.

Discussion:

Dakaris mentions prehistoric pottery and stone tools of a possible Early Bronze date. Douzougli collected local handmade pottery sherds with plastic decoration from large vessels from the locations of Ayios Athanasios and Ayios Konstantinos.

Note: There is another hill on the Ioannina nomos, which used to be known as 'Megali Goritsa'. It is a hill in the north-eastern shore of the lake of Ioannina, in the area of Perama (site # 38), where Dakaris has located and collected prehistoric pottery (KII) and stone tools (Dakaris 1956: 146, n. 3; Papadopoulos 1976: 337; Wardle 1972: 291; Lagaris 1976/1977: 4; Tartaron 1996: 62, 456). It should not be confused with the Kallithea / Megali Goritsa of the Konitsa district.

4. **Kleidonia** (also: Κλειδωνιά, Πηγή Νέλες Κλειδωνιάς)

Topography

• Map reference (GPS):

Degrees: 39.9725 N / 20.67861111 E

DMS: 39° 58' 21 N / 20° 40' 43 E

UTM: Northing: 4424754.5 ,

Easting: 472555.38 , Zone:34S

Elevation: 896 masl.

• Demos: Konitsas.

• Area (description): Kleidonia lies on the eastern bank of the Voidomatis river, in the south part of the fertile and well watered Konitsa plain.

• Accessibility: 11km south-west of Konitsa (the capital of the demos Konitsas).

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: -

• Pottery: 2 sherds of local hand made pottery (Epirus 1a).

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Douzougli 1996: 35, 61, fig. 6β,γ.

Plate: 13e-f.

Discussion:

Sherds were brought to Ioannina Museum in 1994 with a provenance of the Neles Kleidonias springs.

5. Konitsa, School of Agriculture (also: Κόνιτσα, Γεωργική Σχολή Κόνιτσας, Αναγνωστοπούλεια Γεωργική Σχολή)

Topography

• Map reference (GPS):

Degrees: 40.04861111 N / 20.75666666 E

DMS: 40° 2' 55 N / 20° 45' 24 E

UTM: Northing: 4433181.0 ,
Easting: 479243.8 , Zone: 34T

Elevation: 1115 masl.

• Demos: Konitsas.

• Area (description): within the modern town of Konitsa, 500m west of the Konitsa School of Agriculture.

• Accessibility: Konitsa is the capital of the demos Konitsas.

Archaeology

• Degree of work: chance finds.

• Architecture: surface foundations of circular buildings, cornerstones.

• Burials: -

• Pottery: unpainted handmade local pottery sherds from large vessels (Epirus 1a).

• Lithic: a bored celt with heavy rounded butt.

• Bronze: 1 spear-head.

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Hammond 1967: 273, 315, fig. 18:1a,b,c; Papadopoulos 1976: 293, 311, pl. 20; Vokotopoulou 1969b: 197, fig. 7α; Wardle 1972: 285; Andreou 1994: 238; Tartaron 1996: 62, 456; Douzougli 1996: 31-32, 61.

Plate: 15a-e.

Discussion:

Hammond reported scattered cornerstones, 'sherds of rough pottery' and a bored celt 'with heavy rounded butt highly polished and of dark green granite like stone' (Hammond 1967: 273). It was seen by Hammond at the Agricultural School of Konitsa and was later sent to the Athens National Museum (Hammond 1967: 315, fig. 18:1a,b,c). A spear-head, possibly a grave offering, is also reported by Vokotopoulou as a Konitsa find of unknown provenance. Andreou reported surface architectural remains of circular buildings, and collected handmade prehistoric pottery sherds from large vessels (1994:238), which I failed to locate in the Museum of Ioannina storage rooms. Douzougli has also spotted prehistoric pottery sherds.

6. Liatovouni (also: Λιατοβούνι)

Topography

• Map reference (GPS):

Degrees: 40.02277777 N / 20.66916666 E

DMS: 40° 1' 22 N / 20° 40' 9 E

UTM: Northing: 4430337.5 ,

Easting: 471769.5 , Zone: 34T

Elevation: 376 masl.

• Demos: Konitsas.

• Area (description): on the north-eastern plateau of the Liatovouni wooded hill in the middle of the Konitsa valley, just north of the confluence of the Aoos and Voidomatis rivers.

• Accessibility: 6 km west of the modern town of Konitsa (the capital of the demos Konitsas).

Archaeology

• Degree of work: excavation (ongoing).

• Architecture: settlements, foundations of house walls.

• Burials: 13 graves as part of a cemetery.

• Pottery: prehistoric pottery summarised in the Liatovouni 16 pottery classes (see chapters 2.2.4 and 2.2.5)

• Lithic: -

• Bronze: 3 bronze swords, a bronze vessel with a bucranium handle, spearheads, omphalia, bronze buttons or tutuli, other scattered finds.

• Other finds: iron spear-heads.

• Chronology: Late Prehistory.

Bibliography:

Hammond 1967: 273-274; Douzougli 1994: 367-370; Douzougli 1996: 17-25, 43-51, 61, pl. 2a,b; Douzougli 1997: 557-559, pl. 206α-στ; Blackman 1999/2000: 66-67, fig. 91-94; Whitley 2002/2003b: 58, fig. 101.

Plates: 16a-e, 17a-f, 18a-g.

Discussion:

Liatovouni is the most significant archaeological area in the Konitsa district, since it is the only area that benefited from systematic excavation and post-excavation work. Liatovouni is a hill that rises in the Konitsa plain just north of the confluence of the Aoos and Voidomatis rivers. Liatovouni hill reaches an altitude of 524 masl and at about 400 masl has two large plateaux. Hammond had spotted numerous pottery sherds on the north-eastern plateau. Levelling works in 1993 revealed quantities of pottery; architectural and burial remains were discovered by a test trench. Systematic excavation

took place in the years 1994-1997, exposing a cemetery and settlement that have been in continuous use from the 13th to the 4th c. B.C. (Douzougli 1994, Douzougli 1996).

13 out of the 101 excavated graves have been assigned a late prehistoric date thanks to the pottery and other finds that accompanied the dead. The earliest grave is of a 12th/13th century B.C. warrior burial that preserved in situ the bronze finds mentioned above. It is worth mentioning that burial practices seem to remain unaltered until the 4th century B.C.: pit graves of irregular, ovoid or rectangular shape, some framed with pebbles or stones, covered by stone heaps with no sign of tumuli were found, in contrast to the Meropi area in the Pogoni district to the west (site # 13). Burial customs involved inhumations, single burials (although earlier graves were later reused), the deceased was laid extended and directly on the earth or on perishable material, possibly branches (in very few cases).

The nearby settlement was explored in 1997. Structures with curvilinear walls, floor levels, remains of hearths, a possible street, a child burial and quantities of handmade pottery were discovered. It is from this record that the ceramic typology described above emerged (see chapters 2.2.4 and 2.2.5). The 1997 excavation is currently being reviewed for final publication by Dr. A. Douzougli*. For the Liatovouni excavations see also chapter 2.2.5.1; for the pottery record see chapters 2.2.5.2 – 2.2.5.5.

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* I would like to express my deepest gratitude to Drs K. Zachos and A. Douzougli for allowing me to use Liatovouni data for this research.

7. **Mesogephyra** (also: Mesoyefira, Μεσογέφυρα)

Topography

• Map reference (GPS):

Degrees: 40.06527777 N / 20.61527777 E

DMS: 40° 3' 55 N / 20° 36' 55 E

UTM: Northing: 4435073.5 ,
Easting: 467191.53 , Zone: 34T

• Elevation: 442 masl.

• Demos: Konitsas.

• Area (description): located west of the village of Melissopetra and just east of the Molyvdoskepasti monastery, on the east side of the Aoos river before it enters Albania. Dense vegetation covers the formerly cultivated and now abandoned area and the nearby hill.

• Accessibility: about 14 km west of the modern town of Konitsa (the capital of the demos Konitsas).

Archaeology

• Degree of work: chance finds.

• Architecture: possible remains of fortification wall.

• Burials: possible burial.

• Pottery: handmade local pottery sherds (Epirus 1a).

• Lithic: -

• Bronze: 2 swords (LHIII A-B).

• Other finds: -

• Chronology: Late Prehistory (LHIII A-B).

Bibliography:

Dakaris 1956: 131-135, figs. 6, 7; Sandars 1963: 145, fig. 21; Dakaris 1967c: 30 n. 1; Hammond 1967: 274, 277, 318-319, 321, fig. 19:a-b, pl. XXI:a-c; Vokotopoulou 1969b: 193; Wardle 1972: 286; Papadopoulos 1976: 277, 307-309, pl. 17; Wardle 1977: 158, 191; Hope Simpson & Dickinson 1979: 301-302; Tartaron 1996: 62, 456; Douzougli 1996: 26, pl. 2; Zachos 1997: 159; Soueref 2001: 31-32, figs. 22, 23, 53.

Plate: 19a-d.

Discussion:

Dakaris reported two prehistoric swords (LHIII A-B), which had initially been allocated an origin in the Perama area on the eastern shores of the lake of Ioannina (Dakaris 1956), a mistake that Dakaris himself (1967c) and Hammond (1967: 321) later corrected. These swords, possibly from an undiscovered late prehistoric grave, have

been extensively studied and commented by Hammond, Sandars, Vokotopoulou, Wardle, Papadopoulos and Soueref, and are dated to LHIII A-B. Hammond visited the area and, given the area's geography and archaeological indications, postulated a prehistoric fortification wall on the hill of Mesogephyra. Douzougli, in the years 1994-1996, attempted to test Hammond's hypothesis through surveys, which were obstructed by the dense vegetation that is still covering the area. Pottery sherds she collected can be dated to late prehistory (KII/III, Epirus 1a).

8. **Palaiogoritsa** (also: Palia Goritsa, Παλαιογορίτσα)

Topography

• Map reference (GPS):

Degrees: 40.03861111 N / 20.6675 E

DMS: 40° 2' 19 N / 20° 40' 3 E

UTM: Northing: 4432096.0 ,

Easting: 471633.8 , Zone: 34T

Elevation: 396 masl.

• Demos: Konitsas.

• Area (description): hills west of Konitsa and towards the modern village of Mazi, just north of the Aoos river.

• Accessibility: 2km west of Konitsa (capital of the demos Konitsas).

Archaeology

• Degree of work: chance finds.

• Architecture: the area is full of architectural remains, some of which may be prehistoric.

• Burials: the area is full of the remains of ancient graves, some of which may be prehistoric.

• Pottery: handmade local pottery sherds (Epirus 1a).

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory

Bibliography:

Hammond 1967: 273; Douzougli 1996: 29-30, 61, pl. 4β.

Plate: 19e.

Discussion:

Hammond mentions architectural remains, pottery and bronze items from the Paliogoritsa hills, finds that had been spotted earlier by Clarke (Hammond 1967: 273). Road construction, extensive bulldozing and building work in the late 1980s have

altered the landscape and affected the archaeological record dramatically. Surface finds that were delivered to the Museum of Ioannina and/or collected during visits by archaeologists demonstrate late prehistoric human activity in the area.

9. West Slopes of Aoos-Voidomatis valley

(also: Δυτικά Πρανή κοιλάδας Αώου-Βοϊδομάτη)

Topography

• Map reference (GPS):

Degrees: 40.05222222 N / 20.60194444 E

DMS: 40° 3' 8 N / 20° 36' 7 E

UTM: Northing: 4433629.5 ,

Easting: 466047.9 , Zone: 34T

[reading in the Aidonochori village].

• Elevation: 520masl.

• Demos: Konitsas.

• Area (description): dense vegetation covers the slopes over looking the Aoos-Voidomatis valley to the east.

• Accessibility: The slopes are accessible southwards of the villages of Aidonochori and Bourazani (15 km west of the town of Konitsa, capital of the demos Konitsas).

Archaeology

• Degree of work: surface research.

• Architecture: -

• Burials: -

• Pottery: local handmade pottery sherds (Epirus 1a).

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Douzougli 1996: 35-36, 61.

Plates: no drawings / pictures available.

Discussion:

Douzougli mentions surface finds all over the area in the slopes that border the Aoos–Voidomatis valley to the west. She spotted handmade pottery sherds. I visited the area in the summer 2002 and again in November 2002. I have spotted very worn sherds potentially of prehistoric date, mainly KII/III and Liatovouni 1 sherds. Further. more systematic, research is needed in this promising area.

3.3.2 The Pogoni district (pl.20)

The district of Pogoni forms the north-western part of the nomos of Ioannina. Neighbouring districts are Albania to the west, the Konitsa, Ano Kalamas and Zagoria districts to the east and north-east, and the Thesprotia nomos to the south-west (pl 11a). Pogoni consists of two demoi (Ano Pogoniou and Delvinakiou), and 1 koinotita (Pogonianis). It hosts nowadays 34 towns and villages (Nitsiakos et al: 1998: 181). Eight findspots with late prehistoric evidence have been reported.

Geography – Hydrology: Pogoni is a mountainous area of many, but relatively low, mountains, smooth gorges and a number of small plains. The main mountains are the Nemertsika mountains (north), the Kasidiaris mountain (east), the Tsamanta mountains (south) and the Makrykampos mountain (west). Rivers, springs and torrents dominate the landscape. The main rivers are the Gormos to the north, which empties its waters in the Thyamis (Kalamas) river, the Drinos to the east, which rises from the Pogoniani and Dolo area and enters Albania, and the Gyftopotamos to the south, a tributary of the Drinos.

Communication networks: The Pogoni district nowadays lies in the Greek-Albanian border zone, but it should be seen as the area connecting the Drinos / Argyrokastro (Gjirokastër) area in Albania with areas of the Ioannina plateau and southern Epirus. For communication networks in the Pogoni district see Nitsiakos et al. 1998: 185-190.

Sub districts: Four sub districts can be distinguished: 1) the district of Molivdoskepasti to the north-east, 2) the valley of Gormos river to the north, 3) the plain of Giftokabos, known today as Lakka Mouchtary, to the south and 4) the valley of Drinos river to the west.

Areas of Late Prehistoric activity: Archaeological research has revealed evidence of Late Prehistoric human activity in the eight areas presented below in alphabetical order (numbers 10-17). In 7 out of 8 locations, information derives from chance and/or surface survey finds. Systematic work, still not fully published, has been conducted in the Meropi area.

10. Kephalovryso (also: Κεφαλόβρυσο/Μετζητιέ Πωγωνίου)

Topography

• Map reference (GPS):

Degrees: 40.01444444 N / 20.5625 E

DMS: 40° 0' 52 N / 20° 33' 45 E

UTM: Northing: 4429452.5 ,

Easting: 462662.94 , Zone: 34T

Elevation: 708 masl.

• Demos: Ano Pogoniou.

• Area (description): an area with hills overlooking the Gormos plain, known for its springs.

• Accessibility: Vicinity of the Kefalovrysso village (the capital of the Demos Ano Pogoniou).

Archaeology

• Degree of work: chance finds.

• Architecture: foundations of ancient houses.

• Burials: stones from the walling of tumuli.

• Pottery: handmade local pottery sherds with relief-band decoration (Epirus 1a)

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Andreou 1994: 238; Tartaron 1996: 61, 456.

Plates: no drawings / pictures available.

Discussion:

Andreou reported the collection of pottery sherds from the area east of the springs, and thinner pottery and architectural and burial remains from the area of 'Mettalourgiki Ipirou' factory, 300m. north of the springs. He proposes a 12^{th} – 10^{th} century B.C. date. The material is still under study (Andreou, personal communication).

11. Ktismata (also: Κτίσματα/Αρίνιστα Πωγωνίου)

Topography

• Map reference (GPS):

Degrees: 39.89888888 N / 20.39833333 E

DMS: 39° 53' 56 N / 20° 23' 54 E

UTM : Northing: 4416708.0 ,

Easting: 448566.0 , Zone: 34S

Elevation: 526 masl.

• Demos: Delvinakiou.

• Area (description): Ktismata is an area full of hill and waters, controlling the entrance to the valley of the Drinos river.

• Accessibility: It is located 10 km west of Delvinaki town (the capital of the Demos Delvinakiou).

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: 1 cist grave.

• Pottery: handmade local pottery sherds (Epirus 1a).

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Andreou 1994: 238; Tartaron 1996: 62, 456.

Plates: no drawings / pictures available.

Discussion:

Andreou reported a cist burial and prehistoric pottery sherds from the rural area at Poria, around 2km west of the homonymous village, and 1 km from the Albania border. The material is still under study (Andreou, personal communication).

12. Lachanokastro (also: Λαχανόκαστρο/Ωραιόκαστρο)

Topography

• Map reference (GPS):

Degrees: 39.98611111 N / 20.5525 E

DMS: 39° 59' 10 N / 20° 33' 9 E

UTM: Northing: 4426311.5 ,

Easting: 461793.72 , Zone: 34S

Elevation: 580 masl.

• Demos: Ano Pogoniou.

• Area (description): located east of the central Epirus, at the north waterside of the Metsovitikou river.

• Accessibility: 3km south of Kefalovryso.

Archaeology

• Degree of work: chance find.

• Architecture: -

• Burials: -

• Pottery: -

• Lithic: -

• Bronze: -

• Other finds: leaf-shaped iron spear-head.

• Chronology: Late Prehistory.

Bibliography:

Hammond 1967: 340, fig. 23:h, pl. XXIc; Vokotopoulou 1969b: 197-198; Wardle 1972: 286; Papadopoulos 1976: 311-312, pl. 18; Wardle 1977: 158, 193; Tartaron 1996: 62, 456; Soueref 2001: 44, figs. 6, 24.

Plate: 21a-b.

Discussion:

Hammond reported an iron leaf-shaped spear-head from the Lachanokasto hill. He saw it in the Library of Vissani among other finds (site # 16). The spear-head is nowadays lost.

According to Hammond, Lachanokastro is located in the Pogoni district, north of Kalbaki and south of the village of Kephalovryso (1967: 288, map 13). Soueref proposes a location for Lachanokastro opposite the Anchochori village (site # 44) in the demos of Metsovo, western Pindos. There is indeed a hill called Lachanokastro there as well. The area and the village that Hammond denotes as Lachanokastro is nowadays renamed Oraiokastro, and recent maps use the latter name. Similar changes have happened to the names of many areas and villages in Epirus (see above chapter 3.2.3.1). This renaming, together with the above coincidence, must have led Soueref to misplace Hammond's Lachanokastro in western Pindos (see also Vissani site # 16).

13. Meropi Pogoniou

(also: Kato Meropi Pogoniou, Paliopyrgos, Μερόπη/Ρουμπάτες, Κάτω Μερόπη Πωγωνίου/Φραστανά, Παλιόπυργος/ Παλαιόπυργος/Μέβγεζα)

Topography

• Map reference (GPS):

Degrees: 40.01722222 N / 20.52249999 E

DMS: 40° 1' 2 N / 20° 31' 21 E

UTM : Northing: 4429778.0 ,

Easting: 459250.8 , Zone:34T

[reading in the central square of the modern village of Kato Meropi].

Elevation: 653 masl.

• Demos: Ano Pogoniou.

• Area (description): it is the area of the valley of the Gormos river, south of the village Meropi (or Roubates), Paliopyrgos (or Mevyeza) and Kato Meropi (or Frastana). The area consists of small plains for cultivation, plenty of water resources and adequate land for pasture.

• Accessibility: The area is located 7 km west of Kefalovryso (the capital of the demos of Ano Pogoniou).

Archaeology

• Degree of work: ongoing excavations since 1979, ongoing extensive survey forays since 1977, chance finds.

• Architecture: remains from the foundations of house-walls, pottery kiln, amber processing unit.

• Burials: tens of tumuli have been spotted as surface finds. 8 of them have been excavated (2-30 burials for every tumulus). All excavated tumuli revealed box-shaped and pit graves of late prehistoric date.

• Pottery: handmade local pottery of different types, shapes and decorative motifs, imitation Mycenaean sherds. (Epirus 1a, Epirus 1b, Epirus 1c, Epirus 2, Epirus 3, Epirus 4).

• Lithic: unprocessed amber from possible amber processing unit.

• Bronze: fibulae, rings, diadems.

• Other finds: golden spectacle-fibula, bracelet and pins made of bone.

• Chronology: Late Prehistory.

Bibliography:

Koutsoumpinas 1977; Andreou 1980; Andreou 1981; Andreou 1982a; Andreou 1982b; Andreou 1983; Andreou 1984; Andreou 1987; Andreou & Andreou 1987; Andreou 1988: 302-304, pls. 162-164; Andreou 1991; French 1993/1994: 45;

Andreou 1994: 235, 238, fig. 1-14, plans 2-5; Tartaron 1996: 61, 455; Kostoulas 1997: 33-48; Andreou 1997: 553-557, fig. 205β-δ; Andreou & Andreou 1999a; Andreou & Andreou 1999b; Whitley 2002/2003b: 58.

Plates: 22a-d, 23a-g.

Discussion:

The Meropi Pogoniou archaeological interventions comprise a major ongoing programme of archaeological research. The first note concerning the archaeology of the area came from Hammond, who reported information on ancient tombs formed of stone slabs at the area west of Kephalovryson, although he did not visit the area (Hammond 1967: 272). Ten years later, Koutsoumpinas spotted remains of ancient graves in the area (Koutsoumpinas 1977). With further information, guidance and support from local inhabitants (Koutsoumpinas 1977), excavations started in the valley of the Gormos river in 1979, run by Ilias Andreou, Ephor of Antiquities at the time. His work led to the discovery and excavation of a settlement and a number of burial tumuli with graves that are dated by the excavator from the 11th to the 4th centuries B.C., as well as to the spotting and collection of many chance finds. Andreou's efforts even led to the setting of a small museum-like collection on the archaeology of the Gormos valley in the modern village of Meropi (Kostoulas 1997). A series of reports and congress papers provide an account of the archaeological information revealed. Full publication is still pending (Andreou, personnal communication).

Within the area of the Meropi Project, archaeological activity was focused in different areas at different times. A list of the major finds of Late Prehistoric interest follows:

Architectural remains of circular, rectangular and horse-shoe shaped structures, some of which are of Late Prehistoric date, are reported from the areas of Ayios Georgios (junction of the Pogoniani and Kakolakkos modern road), Paliouria Paliopyrgou, Pervanas Paliopyrgou, Plasi Paliopyrgou and Gklava Kato Meropis.

Remains of a prehistoric ('Late Helladic') pottery kiln among burials and house-wall foundations are reported from the area of Glava Kato Meropis (Andreou 1994: 235).

Two kilograms of unprocessed amber and the remains of a possible prehistoric amber processing and production unit have been located in Anemomylos Pogoniou. It will be the first ancient amber production unit discovered in Greece, if this hypothesis is confirmed.

Tens of burial tumuli on the surface in the areas of Paliouria Paliopyrgou, Pervanas Paliopyrgou, Plasi Paliopyrgou, Potamia Paliopyrgou, Gklava Kato Meropis, Kalyvia Kato Meropis and Ayios Ioannis Kato Meropis. Eight tumuli have been so far excavated, all of which contain burials dated to Late Prehistory. All the tumuli were in continuous use and re-use until the 4th century B.C, and in some cases even until early Christian times. All burials were inhumations in pit or box-shaped, rectangular, slab-framed graves. They were covered by soil and/or stone heaps (see also Liatovouni site # 6).

Grave goods of late prehistoric date consist of handmade local pottery sherds and whole pots of many shapes and decorative motifs within the range of the local handmade pottery of Epirus. Three graves from the Glava Kato Meropis tumulus produced metal finds: bronze fibulae, rings and diadems, golden spectacle-fibula, a bracelet made of bone ('οστέινο'). According to Andreou, the archaeological record demonstrates strong links with the Balkans and southern Greece.

Extensive and intensive survey forays add to the archaeological record of the area. Sherds of handmade local pottery, one with a relief-band decoration, a fragment from the rim of a pithos and a box-shaped burial are reported from within the central square of the modern village of Kato Meropi after construction works (Andreou 1994: 238).

New 'evidence' from Ambelia Meropis is reported with no further comment (Kostoulas 1997).

14. Panayia Pogonianis (also: Παναγιά Πωγωνιανής/Βοστίνας)

Topography

• Map reference (GPS):

Degrees: 40.02777777 N / 20.42444444 E

DMS: 40° 1' 40 N / 20° 25' 28 E

UTM: Northing: 4430999.0 ,
Easting: 450890.5 , Zone: 34T

Elevation: 874 masl.

• Koinotita: Pogonianis.

• Area (description): Pogoniani village lies in a small plain just west of the gorge of the Kouvaras river, one of the tributaries of the Drinos river. It is situated in between the larger valleys of the Gormos and Drinos rivers.

• Accessibility: Pogoniani is the capital of the koinotita Pogonianis.

Archaeology

• Degree of work: chance find.

• Architecture: -

• Burials: 1 cist grave.

• Pottery: -

• Lithic: -

• Bronze: -

• Other finds: iron spear head.

• Chronology: Late Prehistory.

Bibliography:

Katsadima 1997.

Plates: no drawings / pictures available.

Discussion:

Katsadima reported a cist burial similar to the many discovered in Meropi (site # 13). It lies next to the church of Panagia, and came to light due to road construction works. The burial was framed and covered by limestone slabs. The deceased was laid extended and his legs were cut off. No pottery is reported. The find is under study, but similarities and connections with the Meropi burials are apparent.

15. Stayrodromi Pogoniou

(also: Stavrodromi, Σταυροδρόμι Πωγωνίου)

Topography

• Map reference (GPS):

Degrees: 39.93305555 N / 20.41388888 E

DMS: 39° 55' 59 N / 20° 24' 50 E

UTM: Northing: 4420491.5 ,
Easting: 449920.75 , Zone: 34S

[reading in the modern village of Stayrodromi].

Elevation: 510 masl.

• Demos: Delvinakiou.

• Area (description): The area lies on hills just west of Kouvaras river overlooking the small plain of Kouvaras river just before it empties its waters into the Drinos river.

• Accessibility: 7km west of Delvinaki (capital of demos Delvinakiou).

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: -

• Pottery: -

• Lithic: -

• Bronze: -

• Other finds: 2 iron spear-heads.

• Chronology: Late Prehistory.

Bibliography:

Douzougli 1993: 303; Blackman 1998/1999: 68.

Plates: no drawings / pictures available.

Discussion:

2 iron spear-heads were handed in by local inhabitants and are reported by Douzougli.

16. Vissani Pogoniou (also: Βήσσανη Πωγωνίου)

Topography

• Map reference (GPS):

Degrees: 39.99361111 N/ 20.53333333 E

DMS: 39° 56' 37 N / 20° 32' E

UTM: Northing: 4421603.0 ,

Easting: 460132.6 , Zone: 34S

[reading in the modern village of Vissani].

Elevation: 759 masl.

• Demos: Delvinakiou.

• Area (description): the area of Vissani lies on the hill of the eastern part of the Pogoni district, a few km west of the Thyamis (Kalamas) river.

• Accessibility: it is located 7.5km east of Delvinaki (capital of Demos Delvinakiou).

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: side slabs from 3 cist graves.

• Pottery: handles of handmade pottery (Epirus 1a).

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Hammond 1967: 302-303, 319, 340, fig. 13c:1-3, pl. XXIc; Papadopoulos 1976: 336-337; Andreou 1994: 238; Tartaron 1996: 63, 457.

Plate: 21d-e.

Discussion:

Hammond reported finds he has seen in the library of Vissani, which at the time used to serve as a small museum, a sword from Zeravina (site # 17) and a spearhead from Lachanokastro (1967: 319, 340. pl. XXIc). He states that the Vissani pottery sherds come from the same location as the Zeravina sword.

Under 'Vissani Pogoniou', Andreou reported remains of three box-shaped burials on the north-western slopes of the 'Hellenistic acropolis, known as Lachanokastro'. I know of only one Lachanokastro hill in the area, whose late prehistoric record is addressed above. Most probably these burial remains should be assigned to the Lachanokastro entry (site # 12).

The dense vegetation does not allow further on-site clarification. The material is still under study (Andreou, personal communication).

17. Zeravina (also: Tseravina, Ζεραβίνα, Τσεραβίνα)

Topography

• Map reference (GPS):

Degrees: 39.91416666 N / 20.53916666 E

DMS: 39° 54' 51 N / 20° 32' 21 E

UTM: Northing: 4418332 ,

Easting: 460614.2 , Zone: 34S

[reading of the lake Zeravina, northern shore].

Elevation: 621 masl.

• Demos: Delvinakiou.

• Area (description): vicinity of the lake of Zeravina, a polje north-west of the Ioannina plain, in between the Kouvaras river to the west and the Thyamis (Kalamas) river to the east.

• Accessibility: 12 km west of Kalpaki (the capital of the demos Kalpakiou).

Archaeology

• Degree of work: chance find.

• Architecture: -

• Burials: -

• Pottery: -

• Lithic: -

• Bronze: 1 sword.

• Other finds: -

• Chronology: Late Prehistory (LHIIIB-C).

Bibliography:

Hammond 1967: 302, 319, 323-324, 332-333, 336-337, fig. 19c, pl. XXIc; Catling 1968: 99; Wardle 1972: 289; Papadopoulos 1976: 277, 307; Wardle 1977: 158; Tartaron 1996: 63, 458.

Plate: 21c.

Discussion:

Hammond reported a bronze sword that he saw in the library of Vissani village. He was told by local inhabitants that it comes from a grave in the vicinity of the Zeravina Lake. It is a type II sword, 0.59m. long, that has been dated to LHIIIB-C.

3.3.3. The Zagori - Kalpaki District (pl. 24)

The Zagori-Kalpaki district, together with the Ioannina plateau, forms the central part of the Ioannina nomos. The Mitsikeli mountain separates the Zagori district from Ioannina to the south. The Gkamila/Tymfi mountains and the Aoos valley constitute its western and northern boundaries with the Konitsa district. To the east, the Vardas river, the main tributary of the Arachthos, forms the natural border with the Arachthos – East Pindos district (pl. 11a). The Zagoria-Kalpaki district consists of five demoi (Tymfis, Anatolikou Zagoriou, Kentrikou Zagoriou, Kalpakiou and Egnatias) and one koinotita (Papingkou) that nowadays host 40 towns and villages (Nitsiakos et al: 1998: 469). Seven findspots with late prehistoric evidence have been noted.

Geography - Hydrology: The geography of the area offers an irregular relief of a series of small elongated plateaux, high mountains and scattered small valleys. The Zagori- Kalpaki district is full of springs and torrents that empty their waters in the surrounding rivers: Aoos to the north, Zagoritikos and Vardas to the east and Voidomatis to the west.

Communication networks: Communication with all neighbouring areas used to be achieved by mountain paths and the rivers (for path networks see Chatzimichali 1957, Tsiodoulos 1997). These paths have nowadays been abandoned. They are used almost exclusively by climbers and mountaineers.

Areas of Late Prehistoric activity: Archaeological research has revealed evidence for Late Prehistoric human presence and activity in the seven areas presented below in alphabetical order (numbers 18-24). In all locations, information derives from chance and/or surface survey finds, occasionally supplemented with rescue excavation. For an overall brief account of the archaeology of the Zagori – Kalpaki district, see Vlachopoulou-Oikonomou 1997a.

18. Aristi Zagoriou (also: Αρίστη Ζαγορίου, Artsista, Αρτσίστα)

Topography

• Map reference (GPS):

Degrees: 39.93305555 N / 20.67361111 E

DMS: 39° 55' 59 N / 20° 40' 25 E

UTM : Northing: 4420378.0,
Easting: 472112.28, Zone: 34S

Elevation: 980 masl.

• Demos: Kentrikou Zagoriou.

• Area (description): the area is occupied by the modern village of Aristi, surrounded by springs and overlooking the Voidomatis river to the east.

• Accessibility: 13 km north of the town of Aspraggeloi (the capital of the demos of Kentrikou Zagoriou).

Archaeology

• Degree of work: chance finds.

• Architecture: remains of rectangular buildings.

• Burials: remains of a cist grave made of limestone slabs.

• Pottery: handmade local pottery sherds (Epirus 1a), and imitation Mycenaean pottery (sherd from a kylix) (Epirus 4).

• Lithic: stone axe.

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Hammond 1967: 316, fig. 18:5; Wardle 1972: 282; Andreou 1994: 238-239, 253, fig. 15-16; Tartaron 1996: 61, 454.

Plate: 25a, b, d.

Discussion:

Hammond reported a 'roughly made and unpolished' stone axe of hard limestone. He saw the find in Aristi (Artsista). Andreou reported surface finds from 2 spots. The first one is at the 'upper' part of the village (Πάνω Μαχαλάς), where remains of a cist grave framed by limestone slabs were spotted during road construction works. Pottery sherds found were dated by Andreou to the 11^{th}-10^{th} centuries B.C.

The second location of archaeological interest consists of the architectural remains of rectangular buildings together with local pottery (body sherds decorated with amorphous clay lumps and impressed bands and/or cordons) and imitation Mycenaean pottery (sherd from a kylix). The assemblage has been dated to the 12^{th}-11^{th} century BC by Andreou (1994: 239).

In summer 2003 neither the cist grave nor the architectural remains were visible.

19. Elaphotopos/ Kalyvia Elaphotopou

(also: Ελαφότοπος, Τσερβάριο, Καλύβια Ελαφότοπου)

Topography

• Map reference (GPS):

Degrees: 39.90027777 N / 20.69 E

DMS: 39° 54' 1 N / 20° 41' 24 E

UTM: Northing: 4416735.0,

Easting: 473476.25, Zone: 34S

Elevation: 851 masl.

• Demos: Kentrikou Zagoriou.

• Area (description): the municipality of Elaphotopos lies on the Pedina (Soudena) plateau west of the Aoos springs area. The area of the burials lies at the foot of the Konismata hill, on the east side of the Pedina plateau.

• Accessibility: 16 km north of Aspraggeloi village (the capital of the demos of Kentrikou Zagoriou). The Kalyvia area is 1 km east of Elaphotopos village.

Archaeology

• Degree of work: excavation, 1 chance find.

• Architecture: -

• Burials: 4 cist graves.

• Pottery: 9 vessels, 8 of which are KIII single high-handled kyathoi, widely scattered local pottery sherds (Epirus 1a).

• Lithic: 9 amber beads, 31 chalcedony beads.

• Bronze: dagger blade (from Kalyvia), 50 beads, 10 rings, 8, small disks, 2 bracelets terminating in spiral disks, 1 curved knife.

• Other finds: -

• Chronology: Late Prehistory (LHIIIB-C).

Bibliography:

ELAPHOTOPOS:

Leake 1835: (I) 166-167; Hammond 1967: 258-272; Vokotopoulou 1967: 345-346; Vokotopoulou 1969a: 345; Vokotopoulou 1969b: 179-191, 204, fig. 1-2, pl. 23-26; Wardle 1972; 187-188, 190, 194, 205, 210, 212, 213, 217, 219, 220, 284; Papadopoulos 1976: 277-279, 282, 283, 287, 288, 290-292, 294, 296, pl. 5α:3291, 7α:3296-3298, 7β:3299, 8:3300,3301,3303, 11:3292; Wardle 1977: 158, 182, 185, 187, 191, 193, 197, fig. 12; Hope Simpson & Dickinson 1979: 302-303; Lagaris 1976/1977: 28-31; Tartaron 1996: 61, 83-84, 455; Vlachopoulou-Oikonomou, 1997b: 50-53; Tsonos 2000: 192-193, 236; Soueref 2001: 33-35, figs. 6, 14, 51Iα, 59I, II, III.

KALYVIA ELAPHOTOPOU:

Dakaris 1967c: 30 n. 1; Vokotopoulou 1968: 294, pl. 235β:B; Wardle 1972: 284: Papadopoulos 1976: 303, 330-331, 337, pl. 16: 3333; Wardle 1977: 191, fig. 13b; Hope Simpson & Dickinson 1979: 302-303; Tartaron 1996: 61. 455: Soueref 2001: 33, figs. 6, 19iib, 52iii.

Plate: 26a-f.

Discussion:

From Elaphotopos: Four cist graves were spotted in the foot of Konismata hill at the east side of mountain chain of Pedina. The burials were excavated in 1966 and produced the grave goods presented above. All graves had been looted in the past. They had an east-west orientation, and were framed by four limestone slabs and paved by three. Test excavations in the vicinity of the graves completed the rescue archaeological work.

From Kalyvia Elaphotopou: a blade of a bronze dagger (0.336m. long) is reported.

The Elaphotopos burials show similarities with those from Kalpaki (site # 22).

20. Greveniti (also: Γρεβενίτι)

Topography

• Map reference (GPS):

Degrees: 39.80722222 N / 21.03611111 E

DMS: 39° 48' 26 N / 21° 2' 10 E

UTM: Northing: 4406361.5,
Easting: 503091.16, Zone: 34S
[reading in the modern village of Greveniti].

Elevation: 1465 masl.

• Demos: Anatolikou Zagoriou.

• Area (description): Greveniti village is located in the highland of east Zagori.

• Accessibility: 16 km north of Miliotades village (the capital of the demos of Anatolikou Zagoriou).

Archaeology

• Degree of work: chance find.

• Architecture: -

• Burials: -

• Pottery: -

• Lithic: stone axe.

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Hammond 1967: 314, fig. 18:2a-c; Wardle 1972: 284.

Plate: 25c.

Discussion:

Hammond reported that he was shown an 'unbored, long, rounded celt with blunt rounded butt' with a provenance of Greveniti.

21. Kakousioi (also: Koukousos, Κακουσιοί, Κουκουσός)

Topography

- Map reference (GPS):

Degrees: 39.89333333 N / 20.62611111 E

DMS: 39° 53' 36 N / 20° 37' 34 E

UTM: Northing:4415985.5,

Easting: 468035.38, Zone: 34S

Elevation: 498 masl.

- Demos: Kalpakiou.
- Area (description): hills north of Kalpaki valley.
- Accessibility: 3 km north of Kalpaki komopolis (the capital of the demos of Kalpaki).

Archaeology

- Degree of work: chance find.
- Architecture: -
- Burials: -
- Pottery: -
- Lithic: -
- Bronze: 1 leaf shaped spear-head.
- Other finds: -
- Chronology: Late Prehistory.

Bibliography:

Hammond 1967: 303, 340, fig. 23j, pl. XXIc; Wardle 1972: 286; Papadopoulos 1976: 311-312; Wardle 1977: 158, 191, 193, 196-197; Tartaron 1996: 61, 455; Soueref 2001: 32-33, figs. 6, 24j.

Plate: 25e.

Discussion:

Hammond saw at the library of the village Vissani a bronze spear-head, which he was told came from the area of Kakousioi (or Kakousos) village, in a district called Kastro. Later this spear-head went to the Museum of Ioannina, where it has been lost.

22. Kalpaki (also: Kalbaki, Καλπάκι, Καλμπάκι)

Topography

• Map reference (GPS):

Degrees: 39.88777777 N / 20.62388888 E

DMS: 39° 53' 16 N / 20° 37' 26 E

UTM : Northing: 4415369.5,

Easting: 467842.66, Zone: 34S

Elevation: 491 masl.

Demos: Kalpakiou.

• Area (description): the area is characterised by small valleys and springs. The Kalpaki area links the Ioannina plateau to the northern parts of Epirus.

• Accessibility: At the 31st km on the modern Ioannina – Konitsa road, just west of the road, within the area of the Greek Army base.

Archaeology

• Degree of work: rescue excavation and chance finds.

• Architecture: -

• Burials: 4 cist graves.

• Pottery: 4 whole pots, (now lost), handmade local pottery sherds, some with plastic decoration (Epirus 1a).

• Lithic: 1 amber bead, 1 chalcedony bead, 2 rock crystal beads.

• Bronze: 1 curved knife, 2 bracelets with spiral terminals, 2 spiral disks of a bracelet, 1 short sword (LHIIIB-C), 1 leaf shaped spear-head, 2 tweezers. Also: 1 sword with no context

• Other finds: 1 clay weight loom.

• Chronology: Late Prehistory (LHIIIB-C).

Bibliography:

Leake 1835: (I) 9; Dakaris 1956: 114-153, figs. 1,2; Hammond 1967: 270, 277, 284, fig. 23g; Desborough 1964: 302, 329, 330, 340, 348, 353, 355, 361, 401; Vokotopoulou 1969b: 193-194, pl. 5; Snodgrass 1971: 172; Wardle 1972: 190, 285; 1977: 158, 191, fig. 13, 193, 196-197; Papadopoulos 1976: 277-278, 280, 281, 286-287, 290-292, 294, 296, 303-307, 311, figs. 5, 6, 8, 11, 16, 20; Lagaris 1976/1977: 28-31; Wardle 1977: 191, fig. 13; Hope Simpson & Dickinson 1979: 302; Tartaron 1996: 84-85, 61, 455; Vlachopoulou-Oikonomou 1997b: 50-53; Tsonos 2000: 192-193, 236; Soueref 2001: 35-38, figs. 6, 19ii, 20:35, 21:13, 24g, 55b, 59.

Plate: 27a-f.

Discussion:

Four cist graves, just 0.10-0.20m. below the surface, were spotted during works at the local Greek Army base, just west of the Ioannina – Konitsa modern road. The burials were excavated in 1953. All graves had a NE-SW orientation and were framed. and two of them covered, by limestone. Test excavations in the vicinity of the graves completed the rescue archaeological work.

Another sword with no context but with a Kalpaki area provenance is reported by Wardle (1977: 191). This sword looks identical to (and most probably is) the Kalyvia sword (site # 19).

The Kalpaki burials show similarities with the Elaphotopos ones (site # 19). Finds indicate influences and/or contacts both with the North (curved knife, bracelets, beads) and the South (swords, spear-head) as well as possible local manufacture or contacts with provincial Mycenaean centre(s) (swords).

23. Kato Pedina

(also: Κάτω Πεδινά Ζαγορίου, Kato Soudenoi Zagoriou, Κάτω Σουδενοί Ζαγορίου, Κάτω Σουδενά)

Topography

• Map reference (GPS):

Degrees: 39.87916666 N / 20.67694444 E

DMS: 39° 52' 45 N / 20° 40' 37 E

UTM : Northing: 4414396.0 ,

Easting: 472375.53 , Zone: 34S

Elevation: 854 masl.

• Demos: Kentrikou Zagoriou.

• Area (description): modern village and small valley in an area among springs.

• Accessibility: 9.5 km north of Aspraggeloi village (the capital of the demos of kentrikou Zagoriou).

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: cist graves.

• Pottery: whole matt painted kantharos (Epirus 2), handmade local pottery sherds Epirus 1a).

• Lithic: -

• Bronze: 1 leaf shaped spear-head.

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Andreou 1988; Douzougli 1992: 291; Andreou 1994: 239, 254, fig. 18-19; Tartaron 1996: 61, 456; Blackman 1997/1998: 69.

Plate: 25f, g.

Discussion:

Andreou proposes a LHIIIB-C date for a whole kantharos and a 1050 B.C. date for a bronze spear-head, finds that were delivered in 1975. He also reported cist burials from the area of Ayia Varvara church, just west of the modern village of Pedina.

Douzougli reported the collection of late prehistoric pottery sherds from an area near two rocky hillocks in the Kato Pedina valley.

24. Tristeno Ioanninon (also: Τρίστενο Ιωαννίνων, Ντρεστενίκο)

Topography

• Map reference (GPS):

Degrees: 39.79277777 N / 21.02499999 E

DMS: 39° 47' 34 N / 21° 1' 30 E

UTM: Northing: 4404758.5,

Easting: 502140.4, Zone: 34S

[reading in the modern village of Tristeno].

Elevation: 1290 masl.

• Demos: Anatolikou Zagoriou.

• Area (description): at the location called Tsouka, in the highlands of east Zagori.

• Accessibility: 11 km north, north-east of the modern village of Meliotades (the capital of the demos of Anatolikou Zagoriou).

Archaeology

• Degree of work: chance find.

• Architecture: -

• Burials: -

• Pottery: -

• Lithic: -

• Bronze: -

• Other finds: iron spearhead.

• Chronology: Late Prehistory.

Bibliography:

Andreou 1994: 241.

Plates: no drawings / pictures available.

Discussion:

Andreou reported an iron spearhead and proposes an Early Iron Age date. The find is still under study (Andreou, personal communication).

3.3.4 The Ioannina - Dodoni District (pl. 28)

The Ioannina - Dodoni district, together with the Zagori – Kalpaki district, forms the central part of the Ioannina nomos (pl. 11a). The district is surrounded by high mountains of an elevation up to 1810 masl (Mitsikeli mountain in the north-east) and 1816 masl (Tomaros (Olytsika) mountain in the south-west.) (pl. 2). The Ioannina - Dodoni district consists of seven demoi (Passaronos, Peramatos, Pamvotidos, Bizaniou, Anatolis, Dodonis and Ioanniton) and one koinotita (Nisou Ioanninon) that nowadays host the city of Ioannina and 65 towns and villages (Nitsiakos et al: 1998: 253, 293, 509). Seventeen findspots with late prehistoric evidence have been noted.

Geography - Hydrology: The main geographical and hydrological feature of the Ioannina – Dodoni district is the polje of the lake of Ioannina (lake Pamvotis, see above chapters 1.4.1 and 1.4.2 above), which was much larger before the mid-19th century draining of the extension-lake of Lapsista (pl. 6b). Plenty of springs water the area. Limestone hills surround the lake, such as the Passarona/Gardiki hill in the north, the hill of the Perama cave in the north-east, the Kastritsa hill in the south and the Dourouti hills in the east. Ioannina island in the middle of the lake is a limestone hill as well. High mountains define the perimeter of the Ioannina plateau (Mitsikeli (1810 m. high), Driskos (1078 m. high), Aetorrachi (1059 m. high), Manoliasa (1076 m. high), Megali Tsouka (1173 m. high), Marmara (879 m. high), Tsouka (766 m. high), Amigdalies (775 m. high) and Pedalonia (840 m. high). Just south-west of the Ioannina plateau, the Dodoni polje with similar attributes is formed, surrounded by the mountains Tomaros or Olitsika (1816m) and Manoliasa (1076m).

Communication networks: The Ioannina – Dodoni district has always been the centre of all routes involving Epirus and north-western Greece.

Areas of Late Prehistoric activity: Archaeological research has revealed evidence of Late Prehistoric human presence and activity in the nineteen areas presented below in alphabetical order (numbers 25-42), with the exception of Dodoni, which is number 43. In all locations, information derives from chance and/or surface survey finds, occasionally supplemented with rescue excavation.

25. Ayioi Anargyroi (also: Agioi Anargyroi, Άγιοι Ανάργυροι)

Topography

• Map reference (GPS):

Degrees: 39.66555555 N / 20.71194444 E

DMS: 39° 39' 56 N / 20° 42' 43 E

UTM: Northing: 4390677.5,

Easting: 475292.12, Zone: 34S

Elevation: 697 masl.

• Demos: Passaronos.

• Area (description): on the hills of the western part of the Ioannina plateau, within easy reach of the Ano Kalamas district to the west, and the Zitsa – Zagori areas to the north.

• Accessibility: 12 km east of the modern village of Eleousa (the capital of the demos Passaronos).

Archaeology

• Degree of work: chance finds.

• Architecture: foundations of buildings.

• Burials: cist graves.

• Pottery: handmade local pottery sherds (Epirus 1a).

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Hammond 1967: 196; Andreou 1994: 240; Tartaron 1996: 61, 454.

Plates: no drawings / pictures available.

Discussion:

From the location known as Ksylokopia, two kilometres to the north-east of the modern village of Ayioi Anargyroi, on a wooded hill, Andreou reported collection of Late Bronze and Early Iron Age handmade pottery sherds, as well as surface remains of building foundations and box-shaped graves. Architectural remains of uncertain date had already been spotted by Hammond. Andreou offers no further comments. The material is still under study (Andreou, personal communication).

26. Dourouti (Panepistimioupoles Ioanninon)

(also: Δουρούτη Πανεπιστημιούπολης Ιωαννίνων)

Topography

• Map reference (GPS):

Degrees: 39.62861111 N / 20.83416666 E

DMS: 39° 37' 43N / 20° 50' 3 E

UTM : Northing: 4386551.5,
Easting: 485768.2, Zone: 34S

Elevation: 492 masl.

• Demos: Ioanniton.

• Area (description): eastern slopes of the Marmara hill, overlooking Ioannina plateau and the lake from the west.

• Accessibility: it is located 4 km west-south-west of Ioannina city (the capital of the demos Ioanniton).

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: -

• Pottery: handmade local pottery sherds (Epirus 1a).

• Lithic: -

• Bronze: -

• Other finds: iron spear-heads and fragments of iron daggers.

• Chronology: Late Prehistory.

Bibliography:

Andreou 1994: 240; Tartaron 1996: 61, 455; Zachos 1997: 159.

Plates: no drawings / pictures available.

Discussion:

Ongoing excavations take place in Dourouti, usually in September every year, (directed by Drs Ioanna Andreou and Konstantina Gravani) in the area of the settlement and cemetery of the 7^{th} – 4^{th} centuries BC. Given the finds that Andreou (1994: 240) mentions, possible human activity and occupation of the area in late prehistory can not be ruled out.

Andreou reported that the opening of a drainage ditch in 1976 within the campus of the modern University of Ioannina revealed handmade local pottery sherds (Epirus 1a), iron spear-heads and fragments of iron daggers. These finds have not yet been published or reported elsewhere. For a reference geographical point, I am attaching the GPS reading of the drainage ditch. Personal communication with Andreou confirmed that the material is still under study.

27. Drabatova / Amphithea

(also: Dravatova, Νραμπάτοβα, Αμφιθέα, Στρούνι, Κρυονέρι)

Topography

• Map reference (GPS):

Degrees: 39.68944444 N / 20.87111111 E

DMS: 39° 41' 22 N / 20° 52' 16 E

UTM : Northing: 4393297.5,
Easting: 488948.38, Zone: 34S

Elevation: 754 mals.

• Demos: Peramatos.

• Area (description): very close to the east side of the lake of Ioannina, at the foot of the Mitsikeli slopes, near a spring called Kryoneri.

• Accessibility: 6km east of Perama (the capital of the demos Peramatos), on the eastern shores of the lake of Ioannina.

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: -

• Pottery: few handmade local pottery sherds (Epirus 1a, Epirus 1b).

• Lithic: -

• Bronze: two swords (lost).

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Hammond 1967: 321; Wardle 1972: 187-188, 194, 220, 284; Papadopoulos 1976: 307-308; Tartaron 1996: 61, 455; Zachos 1997: 159.

Plates: no drawings / pictures available.

Discussion:

Hammond reported he was told of two swords similar to the ones from Mesogephyra. They were lost at the time and never found.

In 1969 Wardle collected handmade local pottery sherds from the area, which Zachos characterised as of Krya 1 and 2 type. Wardle considered these finds, together with the areas geographical attributes, evidence enough to suggest the existence of a late prehistoric settlement.

No further work has been done since. I visited Kryoneri spring in summer 2003 and spotted no further archaeological evidence.

This area is now called the Amphithea village area. It used to be called the Strouni area. It should be noted that there is another area called Strounio or Sistrounio, in the demos of Sellon (site # 57).

28. Ioannina Island (also: Νησί Ιωαννίνων)

Topography

• Map reference (GPS):

Degrees: 39.67888888 N / 20.875 E

DMS: 39° 40' 44 N / 20° 52' 30 E

UTM: Northing: 4392125.5,

Easting: 489280.22, Zone: 34S

Elevation: 467 masl.

• Koinotita: Nisou Ioanninon.

• Area (description): island in the Ioannina Lake.

• Accessibility: 10 minutes from the dock of the city of Ioannina (the capital of the demos Ioanniton) by boat.

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: -

• Pottery: coarse ware sherds.

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Wardle 1972: 291.

Plates: no drawings / pictures available.

Discussion:

Wardle reported pottery from Ioannina island (Wardle 1972: 291).

29. Kastritsa (also: Καστρίτσα)

Topography

• Map reference (GPS):

Degrees: 39.63138888 N / 20.92555555 E

DMS: 39° 37' 53 N / 20° 55' 32 E

UTM: Northing: 4386849.0,

Easting: 493611.47, Zone: 34S

Elevation: 491 masl. (the peak of Kastritsa hill is 759 masl, about 250 m. higher than the lake of Ioannina).

• Demos: Pamvotidos.

• Area (description): located on the south-eastern shore of the lake of Ioannina, at the foot of a limestone hill overlooking the plain of Ioannina.

• Accessibility: 8 km south-east of Ioannina (the capital of Epirus).

Archaeology

• Degree of work: chance finds, rescue excavation works.

• Architecture: -

• Burials: 3 cist graves.

• Pottery: handmade local pottery (K I – IV), imitation Mycenaean wares (Epirus 1a, Epirus 1b, Epirus 1c, Epirus 2, Epirus 3, Epirus 4).

• Lithic: -

• Bronze: 1 sword.

• Other finds: human bones from the burials .

• Chronology: Late Prehistory (stirrup jar dating LHIIIB-C).

Bibliography:

Leake 1835: (IV) 127-129, 196; Dakaris 1951: 173-183, fig. 7; Dakaris 1952: 362-386, figs. 3, 4; Dakaris 1964a: 312-313, pl. 351; Dakaris 1966a: 288; Dakaris 1967c: 30-36, fig. 1, pl. I; Hammond 1967: 173-175, 192, 199, 291-297, 313-314, 359 n. 3, 409-411, fig. 7-8, 10, pl. 15; Vokotopoulou 1968: 291, pl. 235; Vokotopoulou 1969b: 193-194; Wardle 1972: 180, 187, 190, 193-194, 197-198, 200, 202-203, 205, 207, 211, 217, 220, 285, 291; Kilian 1975: 31-32; Papadopoulos 1976: 277-278, 280-284, 303-307, 318, pls. 1, 4, 16; Lagaris 1976/1977: 4, 6, 28-31; Wardle 1977: 158, 161, 177, 180-182, 187; Hope Simpson & Dickinson 1979: 301; Kourtessi-Philippakis 1990: 44-51; Tartaron 1996: 61, 455; Zachos 1997: 156; Tartaron & Zachos 1999: 58, 64-65; Tsonos 2000: 192-193, 236; Soueref 2001: 45-48, figs. 6, 19, 36, 38-41, 46, 47, 48, 52.

Plates: 9a-f, 29a-i, 30a-g.

Discussion:

Kastritsa hill lies in a commanding position, overlooking the plain of Ioannina, on the passage that modern and possibly earlier transhumant pastoralists use for their movement in and out of the plain of Ioannina (Chatzimichali 1957). The newly built Egnatia Motorway follows this track. Kastritsa also offers good land for cultivation and animal breeding. There are remains of human presence from the Palaiolithic age until nowadays. Before Carapanos' excavations at Dodoni (Carapanos 1878), Kastritsa was the favoured candidate for the Dodona sanctuary and oracle location (for a relevant overview see Chasiotis 1867, see also chapters 1.62 and 1.63 above).

Kastritsa is the site that produced the pottery whose typology has dominated Epirus' late prehistory. In 1951-1952 Dakaris conducted excavations on the plain just east of the Kastritsa hill, where pottery sherds had been exposed by a drainage channel. Stratigraphy revealed a late prehistoric and a Classical – Hellenistic phase, mixed together in some places. The local handmade pottery sherds that dominated the archaeological record were classified as K (Kastritsa) I, II, III, IV wares (see chapter 2.2.2 above). No imported Mycenaean pottery was found, but local pottery vessels imitating Mycenaean shapes were discovered.

Twelve years later, Dakaris discovered a cist grave destroyed by heavy rain and flooding next to the area excavated in 1951-1952. A small imitation Mycenaean stirrup jar was found in the grave. Moreover, three whole vessels were reported, among which was an imitation Mycenaean two-handled small amphora.

Two more graves were discovered in later years in the area of Kastritsa, one with no grave goods but with handmade local pottery sherds all around (Dakaris 1964; Hope Simpson & Dickinson 1979) and the other with a bronze sword (Vokotopoulou 1968; Hope Simpson & Dickinson 1979).

Pottery from Kastritsa in the collection of the British School of Archaeology at Athens is reported by Wardle 1972: 291.

30. Kato Lapsista (also: Lapsistis, Κάτω Λαψίστα)

Topography

• Map reference (GPS):

Degrees: 39.75361111 N / 20.74944444 E

DMS: 39° 45' 13 N / 20° 44' 58 E

UTM: Northing: 4400441.0,

Easting: 478536.0, Zone: 34S

Elevation: 473 masl.

• Demos: Passoronos.

• Area (description): the area lies on the shoreline of the former lake of Lapsista (see chapter 1.4.1 and 1.4.2, pl. 6b).

• Accessibility: 4 km north of Eleousa (the capital of the demos Passaronos).

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: cist tomb (?).

• Pottery: handmade local pottery sherds and a kyathos with plastic decoration (Epirus 1a).

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Vokotopoulou 1969b: 190, pl. 25a; Wardle 1972: 286; Papadopoulos 1976: 337; Wardle 1977: 158; Tartaron 1996: 61, 455, Zachos 1997: 160.

Plates: no drawings / pictures available.

Discussion:

Zachos, following Vokotopoulou, reported pottery delivered in the years 1967 and 1968 from two Lapsista locations. Wardle reported a cist tomb, on which I found no further information.

31. Krya Ioanninon (also: Κρύα Ιωαννίνων)

Topography

• Map reference (GPS):

Degrees: 39.72166666 N / 20.83916666 E

DMS: 39° 43' 18 N / 20° 50' 21 E

UTM: Northing: 4396878.0,

Easting: 486215.72, Zone: 34S

Elevation: 736 masl.

• Demos: Peramatos.

• Area (description): on the shores of the area that used to connect the lake of Ioannina with the now drained lake of Lapsista (see chapter 1.4.1 and 1.4.2, pl. 6b).

• Accessibility: 5 km north of Perama village (the capital of the demos Peramatos).

Archaeology

• Degree of work: systematic excavations, chance finds.

• Architecture: possible remains from the foundations of huts.

• Burials: hypothetical burial.

• Pottery: local handmade pottery sherds, red-orange ware, pottery of Mycenaean/ Submycenaean types (kylikes), fragments of 18 pithoid vessels, few wheelmade sherds (Epirus 1a, Epirus 1b, Epirus 1c, Epirus 2, Epirus 3, Epirus 4).

• Lithic: stone tools.

• Bronze: 1 bronze pin (of Submycenaean – Protogeometric date), other small objects of bronze.

• Other finds: 3 iron spearheads, 1 iron curved knife, animal bones (sheep, goat, cattle), bone tools, weight looms.

• Chronology: Late Prehistory.

Bibliography:

Andreou 1988: 304, pl. 165; Zachos 1989: 252-253; Kourtessi-Philippakis 1990: 44-51; French 1990/1991: 41; Andreou 1994: 239-240, fig. 20-23; Douzougli & Zachos 1994: 11-50, pl. 1-48; Tomlinson 1995/1996: 22; Zachos 1997: 157-158, Tartaron & Zachos 1999: 58, 70-71.

Plate: 31a-c.

Discussion:

Krya football pitch: Andreou reported remains of foundation walls and six fragments from pithoid vessels that came to light in June 1988 during levelling works for the creation of a football pitch. These finds came from just west of the village of

Krya, on the road to Lykotrichi. He also reported the collection of matt-painted pottery sherds as well as three loom weights.

In 1989, Zachos undertook systematic excavation (seven main trenches and extra test trenches) in the area of the football pitch, revealing two layers of occupation with the remains of hearths. Stones, possibly from the foundations of huts, were spotted in two trenches. Copious handmade local pottery sherds were discovered, with very few wheel made sherds. Pottery was classified in five categories (see chapter 2.2.3 above): Krya 1 (similar to K II), Krya 2 (similar to K III), Krya 3 (similar to the 'orange-red ware'), Krya 4a (similar to K IV) and Krya 4b (similar to the two phases of the so-called 'Boubousti Ware', see Heurtley 1926/1927).

Other finds include fragments of twelve pithoi, animal bones, clay loom weights, stone and bone tools. Most important of all in terms of chronology was the discovery of a bronze fibula that can be securely dated to the Submycenaean – Protogeometric period (Kilian- Dirlmeier 1984). More over, if we accept the Krya 4b pottery as Iron Age pottery, then clearly Krya is a site that marks the transition from the Late Prehistory to the Early Iron Age (Tartaron & Zachos 1999: 70-71).

Krya, within the modern village: Andreou reported an iron dagger and three iron spear-heads found 1 – 1.20 m. below the surface soil during house building works in the village of Krya. He hypothesises that they came from a destroyed burial.

32. Koutselio

(also: Koutsoulion, Koutsoulio, Κουτσελιό, Κουτσουλιό)

Topography

• Map reference (GPS):

Degrees: 39.58888888 N / 20.91416666 E

DMS: 39° 35' 20 N / 20° 54' 51 E

UTM: Northing: 4382133.0,

Easting: 492629.6, Zone: 34S

Elevation: 510 masl.

• Demos: Pamvotidos.

• Area (description): Koutselio lies in the Ioannina plain, south east of the lake of Ioannina, very close to Kastritsa (site # 29).

• Accessibility: 3km south of Katsika (the capital of the demos Pamvotidos).

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: -

• Pottery: handmade local pottery (Epirus 1a, Epirus 2).

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Hammond 1931/2: 133-135; Evangelidis 1952: 279; Hammond 1967: 292, 295 n. 2, 298, 301, 305, 308, 361, figs. 11, 13-15; Wardle 1972: 187, 200, 202, 286, 291; Papadopoulos 1976: 274, 282; Lagaris 1976/1977: 4, 6; Wardle 1977: 177, 187; Kourtessi-Philippakis 1990: 44-51; Tartaron 1996: 62, 456: Zachos 1997: 159.

Plates: 31e.

Discussion:

Sherds and complete pots of handmade local pottery are reported and discussed by Evangelidis and Hammond (KIII, KIVa, KIVb, Boubousti ware).

Pottery from Koutselio is reported by Wardle (1972: 291) in the collection of the British School of Archaeology at Athens.

33. Lykotrichi (also: Λυκοτρίχι)

Topography

• Map reference (GPS):

Degrees: 39.74777777 N / 20.81166666 E

DMS: 39° 44' 52 N / 20° 48' 42 E

UTM : Northing: 4401013.5,

Easting: 483867.5, Zone: 34S

Elevation: 740 masl.

• Demos: Peramatos.

• Area (description): on the foot of Mitsikeli mountain, just north-west of Krya.

• Accessibility: 7 km north of Perama (the capital of the demos Peramatos).

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: -

• Pottery: handmade local pottery sherds (Epirus 1a).

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Tartaron 1996: 62, 456; Zachos 1997: 158.

Plates: no drawings / pictures available.

Discussion:

Zachos reported handmade local pottery sherds (K II/III) with plastic decoration, delivered in 1957.

34. Neochoropoulo (also: Neochoropoulos, Νεοχωρόπουλο)

Topography

• Map reference (GPS):

Degrees: 39.62861111 N / 20.83416666 E

DMS: 39° 37' 43 N / 20° 50' 3 E

UTM: Northing: 4386551.5,

Easting: 485768.2, Zone: 34S

Elevation: 498 m.

• Demos: Ioanniton.

• Area (description): the area is located on the east slopes of the Marmara hills, forming the west border of the Ioannina plain. It overlooks the Ioannina plain.

• Accessibility: 5 km south of Ioannina (the capital of Epirus and the demos Ioanniton).

Archaeology

• Degree of work: chance finds.

• Architecture: traces of a possible prehistoric settlement in the area.

• Burials: 1 cist grave.

• Pottery: 3 handmade local pottery vessels, 1 imitation Mycenaean (Epirus 1a).

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Dakaris 1966a: 287, pl. 290; Dakaris 1967d: 399-402, pl. CIX; Wardle 1972: 211, 287; Papadopoulos 1976: 277, 279-282; Tartaron 1996: 62, 456; Zachos 1997: 159; Tartaron & Zachos 1999: 58; Soueref 2001: 48-49, figs. 6, 49iii.

Plate: 31d.

Discussion:

A cist grave was found by accident north of the Monastery of Dourouti. It produced the aforementioned pottery.

35. Neokaisareia (also: Νεοκαισάρεια)

Topography

• Map reference (GPS):

Degrees: 39.58666666 N / 20.87777777 E

DMS: 39° 35' 12 N / 20° 52' 40 E

UTM: Northing: 4381890.0,

Easting: 489504.47, Zone: 34S

Elevation: 694 masl.

• Demos: Bizaniou.

• Area (description): hill overlooking the lake and the Ioannina plain from the south.

• Accessibility: it is located 9 km east of Pedini village (the capital of the demos Bizaniou).

Archaeology

• Degree of work: Chance finds.

• Architecture: remains of circular and rectangular foundation walls. possible remains of city walls.

• Burials: -

• Pottery: handmade local pottery sherds of large vessels (Epirus 1a).

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Andreou 1994: 241; Tartaron 1996: 62, 456.

Plates: no drawings / pictures available.

Discussion:

From the low hill called Skafida, south of the lake of Ioannina and south-east of the modern village of Neokaisareia, Andreou reported architectural remains and pottery sherds from the area of what is nowadays a quarry. He proposes an Early Iron Age date.

36. Passarona/ Gardiki

(also: Passaron, Πασσαρών, Πασσαρώνα, Γαρδίκι, Μεγάλο Γαρδίκι)

Topography

• Map reference (GPS):

Degrees: 39.71611111 N / 20.75527777 E

DMS: 39° 42' 58 N / 20° 45' 19 E

UTM: Northing: 4396277.5,

Easting: 479024.3, Zone: 34S

Elevation: 656 masl.

• Demos: Passaronos.

• Area (description): the area lies on the top of a hill north of the lake of Ioannina, overlooking the plain of Ioannina. Excavations suggest that this is the location of the Classical and Hellenistic city of Passaron.

• Accessibility: 5 km west of Eleousa (the capital of the demos Passaronos). Megalo Gardiki is the name of the modern village nearby.

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: -

• Pottery: handmade local pottery sherds (Epirus 1a).

• Lithic: -

• Bronze: flame-shaped spear-head.

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Dakaris 1954: 52; Hammond 1967: 302; Vokotopoulou 1969b: 197, fig. 7ε, pl. 28a; Wardle 1972: 284, 291; Papadopoulos 1976: 312-315, 332-333, 336; Wardle 1977: 193; Tartaron 1996: 61, 455; Zachos 1997: 160; Tartaron & Zachos 1999: 58; Soueref 2001: 105.

Plate: 31f.

Discussion:

Dakaris and Hammond report handmade local pottery sherds and a flame-shaped spear-head from the area occupied by Classical and Hellenistic Passaron. Additional handmade local pottery sherds are reported by Wardle (1972: 291) and Zachos.

37. Pedini Ayioi Apostoloi

(also: Άγιοι Απόστολοι Πεδινής, Ραψίστα)

Topography

• Map reference (GPS):

Degrees: 39.59972222 N / 20.84333333 E

DMS: 39° 35' 59 N / 20° 50' 36 E

UTM : Northing: 4383343.5,

Easting: 486549.28, Zone: 34S

Elevation: 491 masl.

• Demos: Bizaniou.

• Area (description): west area of the Ioannina plain, what is nowadays the junction of the Egnatia Motorway and the Pedini - Ampelia road.

• Accessibility: vicinity of Pedini town (the capital of the demos Bizaniou).

Archaeology

• Degree of work: chance find, rescue excavation.

• Architecture: -

• Burials: 1 cist grave.

• Pottery: Epirus 1a sherds, whole vessel (possible imitation Mycenaean. Epirus 4).

• Lithic: -

• Bronze: 1 sword (ivory hilt), 1 spear-head.

• Other finds: -

• Chronology: Late Prehistory (LH).

Bibliography:

Karatzaferis 2001; Koutsoliontos 2001a; Koutsoliontos 2001b; Masouridi 2001; Stasinou 2001; Blackman 2000/2001: 64.

Plate: 32a, b.

Discussion:

During works for the building of the Egnatia Motorway, a cist grave was found in the vicinity of the modern town of Pedini. Finds suggest a late prehistoric date, and connections with the Mycenaean world of Southern Greece. The discovery was reported in the press and is still under study.

38. Perama (also: Πέραμα Ιωαννίνων, Μεγάλη Γορίτσα)

Topography

• Map reference (GPS):

Degrees: 39.69527777 N / 20.84861111 E

DMS: 39° 41' 43 N / 20° 50' 55 E

UTM: Northing: 4393948.0,

Easting: 487020.28, Zone: 34S

Elevation: 474 masl.

• Demos: Peramatos.

• Area (description): north side of the Ioannina plain, just north-west of the Perama cave, in the area of the modern Perama village cemetery.

• Accessibility: vicinity of Perama village (the capital of the demos Peramatos).

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: -

• Pottery: handmade local pottery sherds (Epirus 1a. Epirus 1b, Epirus 2).

• Lithic: stone tools

• Bronze: -

• Other finds: part of iron knife, 5 iron spear-heads.

• Chronology: Late Prehistory.

Bibliography:

Dakaris 1956: 146 n. 3; Wardle 1972: 291; Papadopoulos 1976: 337; Lagaris 1976/1977: 4; Andreou 1994; 240, fig. 24, 25; Tartaron 1996: 62, 456-457; Zachos 1997: 158-159; Tsonos 2000: 192-193, 236.

Plate: 32c, d.

Discussion:

Building works for the construction of the wall enclosing the modern Perama cemetery led to the discoveries of pottery and iron items reported by both Andreou and Zachos.

Note 1: Two bronze swords that were found to be from Mesogephyra (site # 7) were initially reported by Dakaris as Perama finds (Dakaris 1956). The mistake was sorted by Dakaris himself (1967c) and Hammond (1967: 321).

Note 2: In the area of Perama there is a hill that used to be known as `Megali Goritsa`. It is a hill in the north-eastern shore of the lake of Ioannina, where Dakaris has located and collected prehistoric pottery (KII) and stone tools (Dakaris 1956: 146 n. 3; Papadopoulos 1976: 337; Wardle 1972: 291; Lagaris 1976/1977: 4; Tartaron 1996: 62, 456). It should not be confused with the Kallithea / Megali Goritsa (site # 3) in the Konitsa district.

39. Rodotopi

(also: Rhodotopi, Goritsa Hill, Bisti Cave, temple of Zeus Areios, Ροδοτόπι, λόφος Γορίτσα, σπήλαιο Μπιστή, ναός Αρείου Διός)

Topography

• Map reference (GPS):

Degrees: 39.70833333 N / 20.72583333 E

DMS: 39° 42' 30 N / 20° 43' 33 E

UTM: Northing: 4395421.5,

Easting: 476497.97, Zone: 34S

Elevation: 539 masl.

• Demos: Passaronos.

• Area (description): location called Bisti upon a hill, north-west of Rodotopi village.

• Accessibility: 6 km west of Eleousa village (the capital of the demos Passaronos).

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: -

• Pottery: handmade local pottery sherds from large hand made vessels (Epirus 1a).

• Lithic: small fragments of stone tools.

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Dakaris 1954: 66; Andreou 1976: 202; Andreou 1994: 239; Tartaron 1996: 62, 457; Zachos 1997: 160.

Plates: no drawings / pictures available.

Discussion:

3 findspots:

Goritsa Hill: In 1993, fragments of pithoi, handmade pottery sherds, and human bones were found in a pit in the courtyard of a house within the village and were handed in to the Museum of Ioannina, 12th Ephorate of Antiquities.

Bisti Cave: Local pottery sherds from large hand made vessels and fragments of stone tools are reported by Andreou as material under study. All finds were collected in 1975. The cave is located just northwest of the Rodotopi village.

Temple of Zeus Areios: some KII pottery sherds were collected by Dakaris.

40. Sentenikos (also: Σεντενικός)

Topography

• Map reference (GPS):

Degrees: 39.70972222 N / 20.86305555 E

DMS: 39° 42' 35 N / 20° 51' 47 E

UTM: Northing: 4395549.0,

Easting: 488261.16, Zone: 34S

Elevation: 745m.

• Demos: Peramatos.

• Area (description): west side of the Ioannina plateau, on the foot of the Mitsikeli mountain, close to the Sentenikos springs, overlooking the lake and plain of Ioannina.

• Accessibility: just east of the modern village of Perama (the capital of the demos Peramatos), in the area of a modern fish farm.

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: -

• Pottery: handmade local pottery sherds (Epirus 1a. Epirus 1b. Epirus 3).

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Tartaron 1996: 62, 457; Zachos 1997: 159.

Plates: no drawings / pictures available.

Discussion:

In 1993, Zachos located a concentration of local pottery sherds in an agricultural field in the area of the Sentenikos spings.

41. Stayraki (also: Stavraki, Σταυράκι)

Topography

• Map reference (GPS):

Degrees: 39.65583333 N / 20.8175 E

DMS: 39° 39' 21 N / 20° 49' 3 E

UTM : Northing: 4389575.0,

Easting: 484343.84, Zone: 34S

[reading in the modern village of Stayraki].

Elevation: 490 masl.

• Demos: Ioanniton.

• Area (description): the modern village of Stayraki lies in the south-western part of the Ioannina plain, south-west of the lake of Ioannina.

• Accessibility: 4km west of Ioannina (the capital of the demos Ioanniton).

Archaeology

• Degree of work: chance finds (?).

• Architecture: -

• Burials: -

• Pottery: handmade local pottery sherds (Epirus 1a) (?).

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Zachos 1997: 159-160.

Plates: no drawings / pictures available.

Discussion:

According to Zachos, a catalogue of ancient sites held in the Museum of Ioannina, which was compiled by Dakaris in the 1960s, reported handmade local pottery sherds from Stayraki. These sherds have been lost.

42. Tsergiani (also: Tseryianni, Τσέργιανη, Λοφίσκος)

Topography

• Map reference (GPS):

Degrees: 39.65999999 N / 20.71888888 E

DMS: 39° 39' 36 N / 20° 43' 8 E

UTM : Northing: 4390059.5,

Easting: 475885.88, Zone: 34S

Elevation: 727 masl.

• Demos: Passaronos.

• Area (description): area full of hills in the west of the Ioannina plain.

• Accessibility: 11 km south-west of Eleousa (the capital of the demos Passaronos).

Archaeology

• Degree of work: chance find.

• Architecture: -

• Burials: -

• Pottery: -

• Lithic: -

• Bronze: 1 single-bladed axe.

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Hammond 1967: 332, fig. 22:b1. pl. XXI:b2; Wardle 1972: 289; Papadopoulos 1976: 298, pl. 12:114; Wardle 1977: 196; Tartaron 1996: 62, 457.

Plate: 32e, f.

Discussion:

Hammond saw this axe in 1937 at Ioannina in the possession of Chr. Soulis.

43. Dodoni (also: Dodone, Dodona, Δωδώνη)

Topography

• Map reference (GPS):

Degrees: 39.54333333 N / 20.77499999 E

DMS: 39° 32' 36 N / 20° 46' 30 E

UTM : Northing: 4377098.0,

Easting: 480666.7, Zone: 34S

Elevation: 684 masl.

• Demos: Dodonis.

• Area (description): a plateau just north of the Louros springs and south-west of the Ioannina plain, among high mountains and springs. It is the area of the sanctuary and oracle of Dodoni. Prehistoric material was found under the Hellenistic bouleuterion.

• Accessibility: vicinity of Dodoni (the capital of the demos Dodonis).

Archaeology

• Degree of work: excavations.

• Architecture: remains of wooden huts (postholes).

• Burials: -

• Pottery: handmade local pottery (Epirus 1a), red-orange ware (Epirus 3), imitation Mycenaean, Mycenaean (Epirus 4).

• Lithic: -

• Bronze: in the bibliography (apart from Carapanos 1868): 6 straight-back knives (1 lost), 1 T-handled knife, 7 bronze swords (2 lost), 2 horned swords, 3 leaf-shaped spear-heads, 6 cruciform axes (2 lost), 5 double axes (2 lost), bracelets.

• Other finds: -

• Chronology: Late Prehistory (LHII – LHIIIB-C).

Bibliography:

Leake 1835: (IV) 168-201; Carapanos 1878: 96, 101-102, 136-140, pls. 53, 54, 57; Evangelidis 1930: 68; Evangelidis 1931: 85-86; Evangelidis 1935: 192-212, 242, figs. 1-3, pls. 2-10; Evangelidis 1952: 279-282, 290, 293, 295, figs. 1-4, 12, 21; Dakaris 1956: 123, 132 n. 1, 134, 141, fig. 9; Evangelidis 1956: 155, pl. 59; Philippson & Kirsten 1956/8: 85; Evangelidis 1959: 114, pl. 100; Dakaris 1965: 350-351, fig. 3, pl. 415; Dakaris 1966b: 78-79, pl. 79; Dakaris 1967a: 33-54, pls. 26, 28, 32, 33, 34; Dakaris 1967b: 34-37; Dakaris 1967c: 31-32; Hammond 1967: 167-173, 319, 328-329, 331-336, 407-408, figs. 10, 12, 17, 21, 22, 27, 28; Dakaris 1968a: 56-57, pls. 38, 40; Dakaris 1968b: 42-59, figs. 44-47; Dakaris 1969: 30-31; Vokotopoulou 1969a: 116; Vokotopoulou 1969b: 193-194, 197 n.

1, pl. 28; Dakaris 1971b: 1-4, 24, 92, pls. 19, 20; Dakaris 1972b: 94-98. pl. 69: Dakaris 1972c: 45; Wardle 1972: 180, 188, 193-194, 196, 197. 200, 202-204, 207, 210-213, 218, 219, 223, 227, 283, 291, figs. 15, 16; Harding 1975: 184. 192, 196, 198; Kilian 1975: 29-30; Papadopoulos 1976: 273, 283-285. 293-307. 311-312, pls. 3, 4, 9, 11, 13, 15, 19; Lagaris 1976/1977: 4; Wardle 1977: 154-155, 158—159, 162, 171, 176-177, 178, 180-183, 186-187, 191, 193, 196-197, figs. 10-12; Hope Simpson & Dickinson 1979: 290-301; Vokotopoulou 1992: 63-90; Tartaron 1996: 61, 454; Tartaron & Zachos 1999: 58, 62-63; Tsonos 2000: 192-193, 236; Soueref 2001: 49-61, figs. 6, 13, 16-18, 21, 23, 24, 26-28, 35-37, 43-45, 47, 50, 51, 54-56.

Plates: 33a,b, 34a-c, 35a-e, 36a-d.

Discussion:

After decades of speculation on the location of Dodoni that favoured Kastritsa (Leake 1835), Wordsworth in 1839 suggested the correct location (Wordsworth 1839: 247-253), subsequently confirmed by Carapanos' excavations (Carapanos 1878, see also chapter 1.6.3). Dodoni is the best known ancient location in north-western Greece, due both to its archaeology (mainly Classical and Hellenistic) and its place in the ancient Greek literary record. The latter suggests a prominent site in late prehistory, a hypothesis that has not yet been confirmed by the archaeological record.

Carapanos reported material that can possibly be assigned a prehistoric date (37 spear-heads, 23 votive axes). Most of it has been lost. Evangelidis and Dakaris carried out excavations in the mid-20th century that led to the discovery of disturbed prehistoric strata which yielded bronze finds, Mycenaean and local pottery, as well as a possible settlement (postholes, hearths, associated bothroi) beneath the Hellenistic Bouleuterion. A possible kiln nearby is also reported by Dakaris (1967a).

The bronze finds have been dated from early LHII to LHIIIB-C. The pottery assemblage is dominated by handmade local wares. According to Wardle (1972: 194-216), the Mycenaean pottery makes up only 5% of the excavated pottery, a statistic that does not demonstrate strong Mycenaean character and/or influences. About 180 Mycenaean sherds were found at Dodoni, dated from LHIIIA2 to LHIIIC. Shapes included kylikes (most common), bowls, kraters, pirriform jars, stirrup jars and a few others. The imitation Mycenaean sherds were very few.

For the latest up-to-date description of the archaeological sites of Dodoni, see Mee & Spawforth 2003.

3.3.5 The West Pindos - Arachthos District (pl. 37)

The West Pindos - Arachthos district forms the eastern part of the Ioannina nomos. Neighbouring districts are nomos of Trikala to the east, nomos of Arta to the south, nomos of Grevena to the north and the districts of Zagori – Kalpaki, Ioannina, and Upper Louros – Acheron to the East (pl. 11a). The West Pindos - Arachthos district consists of five demoi (Metsovou, Tzoumerkon, Katsanochorion, Pramanton, and Vovousis) and five koinotites (Mileas, Vathypedou, Syrakou, Kalariton, Matsoukiou) that nowadays host 43 towns and villages (Nitsiakos et al: 1998: 367, 393, 439). Five places (44-48) with Late Prehistoric evidence have been noted.

Geography- Hydrology: West Pindos is a mountainous area of relatively high mountains and of small plains. The main mountains are: Peristeri (2295m), Tzoumerka (2429m) and Mavrovouni (2160m). The hydrology of West Pindos, and especially of demos Katsanochorion is very similar to Ioannina- Dodoni district hydrology. The main rivers are the Arachthos to the south, Metsovitikos to the east and Aoos to the north. The valley of Metsovitikos river is full of dense vegetation. On the contrary the upland / alpine areas lack forests and dense vegetation in general, offering vast green lands for pasture.

Communications networks: The Arachthos - West Pindos district connects Epirus with eastern Thessaly, through the Katara saddle, just above the town of Metsovo. Passing from Epirus to Thessaly was not a straightforward process, since even nowadays communication is often impossible and not very safe in winter (pl. 11b). The Arachthos river forms north-south natural communication route on the west side of the Pindos mountain range.

Sub-districts: The five demoi and the five koinotites mentioned above form the area's ten sub-districts.

Areas of Late Prehistoric activity: Archaeological research has revealed evidence of Late Prehistoric activity in five areas presented below (numbers 44-48).

44. Anthochori (also: Ανθοχώρι, Δερβεντίστα)

Topography

• Map reference (GPS):

Degrees: 39.7375 N / 21.09444444 E

DMS: 39° 44' 15 N / 21° 5' 40 E

UTM: Northing: 4398627.0,

Easting: 508092.53, Zone: 34S

Elevation: 1133 masl.

• Demos: Metsovou.

• Area (description): the area is situated in a highland zone on the slopes of the Agioi Apostoloi hill next to the Metsovitikos river, a tributary of the Arachthos river.

• Accessibility: 5 km south of Votonosi which is 11 km west of Metsovo (the capital of the demos Metsovou).

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: cist-grave (?).

• Pottery: handmade local pottery sherds (Epirus 1a).

• Lithic: -

• Bronze: spear-head.

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Vokotopoulou 1968: 293, pl. 237; Vokotopoulou 1969b: 198, fig. 8, pl. 28; Vokotopoulou 1972: 116; Wardle 1972: 282; Papadopoulos 1976: 277, 311-312, pl. 18; Tartaron 1996: 61, 454; Soueref 2001: 44-45, figs. 6, 24, 54.

Plate: 39a.

Discussion:

A spear-head, connected to the Urnenfelder Culture, Hallstatt A-B periods of Eastern Europe (1240-1000 BC) (Foltiny 1955; Vokotopoulou 1969b: 195-196) and dated to LHIIIB-C was delivered to the archaeological authorities in 1968 by the priest of the village, who stated that it was from a cist grave in the area of Pyrgos. The cist-grave has not yet been located. Handmade local pottery sherds are also reported. The spear-head is also lost and is known only from photographs and drawings.

It is worth mentioning that Anthochori is adjacent to 'Lachanokastron Votonosiou', an acropolis that has produced Classical and Hellenistic archaeological material (Vokotopoulou 1968: 293; Verdelis 1949; Petsas 1950/1: 44-49; Petsas 1952: 7-10; Hammond 1967: 261-262).

45. **Metsovo** (also: Μέτσοβο)

Topography

• Map reference (GPS):

Degrees: 39.76944444 N / 21.18222222 E

DMS: 39° 46' 10 N / 21° 10' 56 E

UTM: Northing: 4402184.0,
Easting: 515606.62, Zone: 34S

[reading of the modern town of Metsovo].

Elevation: 1162 m.

• Demos: Metsovou.

• Area (description): highland zone of west Pindos.

• Accessibility: vicinity of Metsovo (the capital of the demos Metsovou).

Archaeology

• Degree of work: chance find.

• Architecture: -

• Burials: -

• Pottery: -

• Lithic: double axes, chisel, hammer.

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Wardle 1972: 191, 287.

Plates: no drawings / pictures available.

Discussion:

Wardle reported unpublished Late Bronze Age finds from a hoard.

46. Pramanta (also: Πράμαντα)

Topography

• Map reference (GPS):

Degrees: 39.52305555 N / 21.10138888 E

DMS: 39° 31' 23 N / 21° 6' 5 E

UTM : Northing: 4374828.0,

Easting: 508714.44, Zone: 34S

Elevation: 973 m.

• Demos: Pramanton.

• Area (description): located east of central Epirus, between the Arachthos and Acheloos rivers, in a highland zone with a few small highland plains.

• Accessibility: vicinity of the modern village of Pramanta (the capital of the demos Pramanton).

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: -

• Pottery: coarse pottery (Epirus 1a).

• Lithic: stone axes.

• Bronze: double-axe, fibula.

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Hammond 1967: 178, 314, 334, 355, 360, figs. 22, 25; Wardle 1972: 288, 291; Papadopoulos 1976: 289, 298-302; Tartaron 1996: 62, 457, Soueref 1986: 61-62, figs. 6, 26.

Plate: 39b, c.

Discussion:

Hammond reported bronze finds and stone axes from the location of 'Christe', all nowadays lost. Wardle reported handmade local pottery sherds in the collection of the British School of Archaeology at Athens.

47. Vaxia (also: Βάξια)

Topography

• Map reference (GPS):

Degrees: 39.57 N / 20.9925 E

DMS: 39° 34' 12 N / 20° 59' 33 E

UTM : Northing: 4380033.0,

Easting: 499355.84, Zone: 34S

Elevation: 1017m.

• Demos: Tzoumerkon (within the community of Petrovouni village).

• Area (description): west Pindos highland zone.

• Accessibility: in the vicinity of the modern village of Kedros, on the east bank of the Arachthos river.

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: -

• Pottery: 1 perforated pot-lid with a button-shaped knob, coarse pottery (Epirus 1a).

• Lithic: -

• Bronze: pieces of thin plaque with bronze nails in situ, piece of bowl.

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Hammond 1967: 168, 180-181, 303; Wardle 1972: 290; Papadopoulos 1976: 336; Dakaris 1991; Tartaron 1996: 62, 457.

Plates: no drawings / pictures available.

Discussion:

Hammond reported pottery and bronze finds of possible Late Prehistoric date.

48. Vovousa (also: Βωβούσα Ιωαννίνων)

Topography

• Map reference (GPS):

Degrees: 39.93666666 N / 21.05055555 E

DMS: 39° 56' 12 N / 21° 3' 2 E

UTM : Northing: 4420729.5,

Easting: 504319.44, Zone: 34S

Elevation: 1189 m.

• Koinotita: Vovousis.

• Area (description): highland zones of west Pindos, 1 km south-east of the modern village of Vovousa.

• Accessibility: vicinity of the modern village of Vovousa (the capital of the koinotita Vovousis).

Archaeology

• Degree of work: chance finds.

• Architecture: foundations of buildings, stone heaps.

• Burials: -

• Pottery: handmade local pottery sherds (Epirus 1a).

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Andreou 1994: 240; Tartaron 1996: 63, 457.

Plates: no drawings / pictures available.

Discussion:

Andreou reported all these finds and proposes an 11^{th}-10^{th} century B.C. date.

3.3.6 The Upper Louros / Upper Acheron District (pl. 38)

The district of Upper Louros / Upper Acheron forms the southern part of the Ioannina nomos, the notional limit between the north and the south of Epirus. Neighbouring districts are the Arta, Preveza and Thesprotia nomoi to the south and the west, the plateaux of Dodoni and Ioannina to the north and the highlands of West Pindos to the east (pl. 11a). The Upper Louros / Upper Acheron district consists of three demoi (Agiou Demetriou, Dervizianon and Sellon). It hosts nowadays 40 towns and villages (Nitsiakos et al: 1998: 317, 343). Nine places with late prehistoric evidence have been noted.

Geography- Hydrology: Mountain chains, gorges and hills cover most part of Upper Louros/ Upper Acheron district. There are some plains in the east of the Upper Louros/ Upper Acheron area. The main rivers are the northern parts of Acheron and Louros.

Communication networks: The Upper Louros/ Upper Acheron district communicates with the south coasts of Ionian sea, particularly with the Ambracian gulf. However, access to Ambracian gulf can be rather difficult, since certain paths among hills, gorges and/or high mountains have to be followed, and nowadays they are not really in use. In the north, the village of Tyria is considered to be the main gateway to the Dodoni, Ioannina and Pogoni districts.

Sub districts: In the west part of the Upper Louros/ Upper Acheron district you can distinguish 3 sub districts: 1) the valley of the Tyria river, 2) the area between the Souli and Lippas mountains and 3) the area among the Tomaros, Lippas and Kourilas mountains.

Areas of Late Prehistoric activity: Archaeological research has revealed evidence of Late Prehistoric activity in nine areas presented below (numbers 49-57).

49. **Georgani** (also: Georyianni, Yeorgiani, Γεωργάνοι)

Topography

• Map reference (GPS):

Degrees: 39.41277777 N / 20.78861111 E

DMS: 39° 24' 46 N / 20° 47' 19 E

UTM: Northing: 4362606.0,

Easting: 481802.22, Zone: 34S

Elevation: 995 masl.

• Demos: Dervizianon.

• Area (description): upland zone of the Upper Louros / Upper Acheron districts.

• Accessibility: 3 km north of Derviziana (the capital of the demos Dervizianon).

Archaeology

• Degree of work: chance find.

• Architecture: -

• Burials: -

• Pottery: -

• Lithic: stone axe.

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Hammond 1967: 314, pl. XXIbI; Wardle 1972: 284.

Plate: 40a.

Discussion:

Hammond reported a stone axe of Prehistoric date.

50. Katamachi (also: Καταμάχη Ιωαννίνων)

Topography

• Map reference (GPS):

Degrees: 39.48138888 N / 20.66277777 E

DMS: 39° 28' 53 N / 20° 39' 46 E

UTM: Northing: 4370253.0,

Easting: 470998.12, Zone: 34S

Elevation: 560 m.

• Demos: Sellon.

• Area (description): It is located north of the modern village of Lakka-Souliou, north-east of Paramythia and sourth-west of Dodoni in central Epirus. Mt. Alysos lies above the village.

• Accessibility: 10 km south south-west of Tyria (the capital of the demos Sellon).

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: -

• Pottery: -

• Lithic: stone tools.

• Bronze: 5 double axes, 1 chisel, 1 fiddle-shaped spear-head (LHIIIB).

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Dakaris 1972a: 65; Vokotopoulou 1972: 112-119, figs. 2, 4; Papadopoulos 1976: 297, 299-302, pls. 5, 10, 14, 15; Andreou 1994: 241, fig. 26; Tartaron 1996: 61, 455; Soueref 2001: 62-63, figs. 6, 26III, 57I-IV, 58I,III,IV.

Plate: 39d, e.

Discussion:

Vokotopoulou reported 5 bronze double axes and other tools. She also reported that she conducted a small-scale surface survey that produced no finds.

Andreou reported a fiddle-shaped spear-head which he dates to LHIIIB from the location of Sourvia, north-west of the Katamachi village primary school.

51. Kopani (also: Κοπάνη)

Topography

• Map reference (GPS):

Degrees: 39.47472222 N / 20.84638888 E

DMS: 39° 28' 29 N) / 20° 50' 47 E

UTM: Northing: 4369470.5,

Easting: 486787.97, Zone: 34S

Elevation: 370 masl.

• Demos: Agiou Demetriou.

• Area (description): upland zone of the Upper Louros / Upper Acheron districts.

• Accessibility: 2 km south, south- west of Theriakisio (the capital of the demos of Agios Demetrios).

Archaeology

• Degree of work: chance finds

• Architecture: -

• Burials: cist graves.

• Pottery: handmade local pottery sherds with plastic decoration (Epirus 1a), rims of skyphoids with vertical walls, imitation Mycenaean stem of kylix (Epirus 4), sherds from thinner vessels with brown / black polished surfaces.

• Lithic: -

• Bronze: -

• Other finds: 1 fragment of iron curved knife.

• Chronology: Late Prehistory (MH – Early Iron Age).

Bibliography:

Andreou 1994: 241; Tartaron 1996: 62, 456.

Plates: no drawings / pictures available.

Discussion:

Andreou reported surface survey finds from two locations: Vromoneri (cist graves, pottery described above) and Selia (3 cist graves and pottery that sounds KII/III; finds spotted in 1982). Finds are still under study.

52. Pesta Sklivanis

(also: Peston-Sklivanis, Πεστά Σκλίβανης, Πεστών Σκλίβανης)

Topography

• Map reference (GPS):

Degrees: 39.46138888 N / 20.91833333 E

DMS: 39° 27' 41 N / 20° 55' 6 E

UTM : Northing: 4367982.5,

Easting: 492974.47, Zone: 34S

Elevation: 823 masl.

• Demos: Agiou Demetriou.

• Area (description): upland zone of the Upper Louros / Upper Acheron districts.

• Accessibility: 7 km south-east of Theriakisio (the capital of the demos of Agiou Demetriou).

Archaeology

• Degree of work: chance find.

• Architecture: -

• Burials: -

• Pottery: -

• Lithic: -

• Bronze: 1 spear-head.

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Vokotopoulou 1969b: 197, n. 1, fig. 7:ια, pl. 28; Wardle 1972: 288; Papadopoulos 1976: 311, pl. 20; Wardle 1977: 193; Tartaron 1996: 62, 457.

Plate: 39f.

Discussion:

Vokotopoulou reported a bronze spear-head on the premises of the Εταιρεία Ηπειρωτικών Μελετών in Ioannina, possibly from Pesta Sklivanis.

53. Romano (also: Ρωμανό)

Topography

• Map reference (GPS):

Degrees: 39.38388888 N / 20.70083333 E

DMS: 39° 23' 2 N / 20° 42' 3 E

UTM : Northing: 4359421.0,

Easting: 474235.25, Zone: 34S

Elevation: 369 masl.

• Demos: Dervizianon.

• Area (description): upland zone of the Upper Louros / Upper Acheron districts.

• Accessibility: 10 km south of Dervizianon, the capital of the demos Dervizianon.

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: 1 cist grave, pit grave with cremation urns.

• Pottery: Epirus 1a sherds.

• Lithic: -

• Bronze: 1 bracelet, 1 fibula, 3 rings.

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Dakaris 1960: 200; Hammond 1967: 302; Dakaris 1971a: 29; Wardle 1972: 288; Papadopoulos 1976: 338; Andreou Ioanna 1977; Andreou 1994: 241; Tartaron 1996: 62, 457.

Plates: no drawings / pictures available.

Discussion:

Dakaris reported a pit grave with cremation urns and 'prehistoric pottery' (1960: 200).

Andreou reported an 11th century cist grave with bronze grave goods on the slope of the hill off the main road that leads to the Monastery of Metamorfoseos.

54. Terovo (also: Τέροβο)

Topography

• Map reference (GPS):

Degrees: 39.41111111 N / 20.87416666 E

DMS: 39° 24' 40 N / 20° 52' 27 E

UTM: Northing: 4362407.0,

Easting: 489167.2, Zone: 34S

Elevation: 692 masl.

• Demos: Agiou Demetriou.

• Area (description): it is located on a valley east of the Louros river, south of central Epirus.

• Accessibility: 18 km south of Theriakisio (the capital of the demos of Agios Demetrios).

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: -

• Pottery: handmade local pottery sherds (Epirus 1a).

• Lithic: -

• Bronze: 2 double axes.

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Hammond 1967: 302, 335, figs. 11, 13, 15, 16, 22; Vokotopoulou 1972: 116; Wardle 1972; 187, 289, 291; Papadopoulos 1976: 297, 299-302, pls. 12, 13; Wardle 1977: 187, 196; Tartaron 1996: 62, 457; Soueref 2001: 64, figs. 6, 26, 56VI,VII.

Plate: 40b-d.

Discussion:

Hammond reported a bronze double axe and handmade pottery sherds from Terovo. Vokotopoulou reported another bronze double axe. Wardle (1972: 291) mentioned pottery from Terovo in the collection of the British School of Archaeology at Athens.

55. Theriakisio (also:Θεριακήσιο)

Topography

• Map reference (GPS):

Degrees: 39.50666666 N / 20.86472222 E

DMS: 39° 30' 24 N / 20° 51' 53 E

UTM: Northing: 4373013.5,

Easting: 488369.97, Zone: 34S

Elevation: 717 masl.

• Demos: Agiou Demetriou.

• Area (description): upland zone of the Upper Louros / Upper Acheron districts.

• Accessibility: vicinity of the modern village of Theriakisio (the capital of the demos of Agios Demetrios).

Archaeology

• Degree of work: chance finds.

• Architecture: foundations of circular and rectangle buildings.

• Burials: tumuli.

• Pottery: handmade local pottery sherds of large vessels (Epirus 1a).

• Lithic: -

• Bronze: -

• Other finds: 1 fragment of an iron knife.

• Chronology: Late Prehistory.

Bibliography:

Andreou 1994: 241; Tartaron 1996: 62, 457.

Plates: no drawings / pictures available.

Discussion:

Andreou reported finds from 2 locations. The first is the Kalogeritsa hill, where he spotted remains of tumuli and collected handmade local pottery sherds. The second, Koukousounitsa (2km west of Theriakisio village, at the south west of the Prophetes Elias church), has preserved foundations of circular and rectangle buildings. Andreou collected handmade local pottery sherds from the area. Finds are still under study.

56. Toskesi-Achladea (also: Τοσκέση- Αχλαδέα)

Topography

• Map reference (GPS):

Degrees: 39.45222222 N / 20.77277777 E

DMS: 39° 27' 8 N / 20° 46' 22 E

UTM: Northing: 4366986.5,

Easting: 480450.25, Zone: 34S

Elevation: 1043 masl.

• Demos: Dervizianon.

• Area (description): upland zone of the Upper Louros / Upper Acheron districts.

• Accessibility: 10 km north of Derviziana (the capital of the demos Dervizianon).

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: -

• Pottery: handmade local pottery sherds (Epirus 1a).

• Lithic: stone pickaxe.

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Vokotopoulou 1969a: 253, pl. 256γ; Dakaris 1971a: 29; Wardle 1972: 291; Papadopoulos 1976: 274, 293, 338; Lagaris 1976/1977: 8-12; Tartaron 1996: 62, 457.

Plates: no drawings / pictures available.

Discussion:

Vokotopoulou reported a stone pickaxe from the area. Wardle mentioned pottery from Toskesi-Achladea in the collection of the British School of Archaeology at Athens.

57. Sistrounio (also: Strounio, Seistrounio, Στρούνιο, Σιστρούνιο)

Topography

• Map reference (GPS):

Degrees: 39.41111111 N / 20.69805555 E

DMS: 39° 24' 40 N / 20° 41' 53 E

UTM: Northing: 4362443.0,

Easting: 474006.03, Zone: 34S

Elevation: 344 masl.

• Demos: Sellon.

• Area (description): upland zone of the Upper Louros / Upper Acheron districts.

• Accessibility: 15 km south of Tyria (the capital of the demos Sellon).

Archaeology

• Degree of work: chance find.

• Architecture: -

• Burials: cist graves (?).

• Pottery: handmade local pottery sherds (Epirus 1a sherds).

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Dakaris 1960: 200-201; Hammond 1967: 302; Wardle 1972: 288; Papadopoulos 1976: 338; Tartaron 1996: 62, 457.

Plates: no drawings / pictures available.

Discussion:

Dakaris reported handmade local pottery sherds possibly from cist graves from Sistrounio.

Note: There is an area called Strouni (or Drabatova or Amphithea in the bibliography), in the demos of Peramatos (site # 27).

3.3.7 The Upper Kalamas District (pl. 41)

The upper Kalamas district forms the southwestern part of the nomos of Ioannina. Neighbouring districts are the nomos of Thesprotia to the south-west, the Pogoni district to the north-west, the Ioannina- Dodoni district to the east and the upper Louros district to the south (pl. 11a). The upper Kalamas district consists of five demoi (Molosson, Ano Kalamas, Ekalis, Zitsas, Eurymenon) and one koinotita (Lavdanis) that nowadays host 44 towns and villages (Nitsiakos et al: 1998: 211, 271). Late Prehistoric evidence has been reported in five places.

Geography- Hydrology: The river of Kalamas that cuts the upper Kalamas district in a north and a south part, runs between the Kasidiaris and Kourenta mountains. Low hills, gorges and small valleys enhance the vegetation in the area, and form a uniquely picturesque landscape, typical of Epirus lowland zones. Kalamas receives the waters of many currents and tributaries, the most important of which is the Tyrias river to the south-east.

Communication networks: The upper Kalamas district is considered to be one of the most important gateways, connecting inland Epirus with the Ionian sea.

Sub districts: The five demoi and the one koinotita mentioned above form the area's six sub-districts.

Area of Late Prehistoric activity: Archaeological research has revealed evidence of Late Prehistoric activity in five areas presented below (numbers 58-62).

58. Despotiko (also: Dhespotikon, Δεσποτικό Ιωαννίνων)

Topography

• Map reference (GPS):

Degrees: 39.73833333 N / 20.56638888 E

DMS: 39° 44' 18 N / 20° 33' 59 E

UTM: Northing: 4398805.5,

Easting: 462846.16, Zone: 34S

Elevation: 519 masl.

• Demos: Molosson.

• Area (description): lowland zone of Upper Kalamas.

• Accessibility: vicinity of the modern village of Despotiko.

Archaeology

• Degree of work: chance finds.

• Architecture: -

• Burials: cist graves.

• Pottery:-

• Lithic: -

• Bronze: 1 spear-head.

• Other finds: -

• Chronology: Late Prehistory (LHIIIC).

Bibliography:

Andreou 1994: 239; Tartaron 1996: 61, 454.

Plates: no drawings / pictures available.

Discussion:

Andreou reported finds from two locations: a bronze spear-head from Gouves (just north-east of the modern village of Despotiko) and remains of cist graves at Provatates (south of the Ayios Demetrios church just off the village of Despotiko). Finds require further investigation and are still under study (Andreou, personal communication).

59. Gribiani (also: Γρίμπιανη, Γκρίμπιανη, Γρίβιανη, Αρετή)

Topography

• Map reference (GPS):

Degrees: 39.82861111 N / 20.58194444 E

DMS: 39° 49' 43 N / 20° 34' 55 E

UTM : Northing: 4408818.5,

Easting: 464225.72, Zone: 34S

Elevation: 386 masl.

• Demos: Ano Kalama.

• Area (description): lowland zone of Upper Kalamas.

• Accessibility: vicinity of modern village of Areti, 5 km south of Parakalamos (the capital of the demos of Ano Kalama).

Archaeology

• Degree of work: chance find.

• Architecture: -

• Burials: cist grave (?).

• Pottery: -

• Lithic: -

• Bronze: 1 spear-head.

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Dakaris 1956: 131; Hammond 1967: 340, 355, 360; Wardle 1972: 285; Wardle 1977: 158, 193; Tartaron 1996: 61, 455.

Plate: 42e.

Discussion:

Gribiani is known from a bronze spear-head dated to LHIIIB-C, delivered to the archaeological authorities in the 1950s by the teacher of the modern village of Gribiani, who stated that it was from a cist-grave in the area. The cist-grave has not yet been located.

The spear-head has been connected to the Urnenfelder Culture, Hallstatt A period of Eastern Europe (1240-1000 BC) (Foltiny 1955; Vokotopoulou 1969b: 195-196).

60. Mazaraki (also: Μαζαράκι)

Topography

• Map reference (GPS):

Degrees: 39.80555555 N / 20.60833333 E

DMS: 39° 48' 20 N / 20° 36' 30 E

UTM: Northing: 4406249.5,

Easting: 466472.78, Zone: 34S

Elevation: 407 masl.

• Demos: Ano Kalama.

• Area (description): just west of the springs on a hill overlooking the Thyamis (Kalamas) river in a fertile, well-watered area.

• Accessibility: 8 km south of Parakalamos village (the capital of the demos of Ano Kalama).

Archaeology

• Degree of work: chance finds, rescue excavation.

• Architecture: foundations of buildings.

• Burials: 3 cist graves.

• Pottery: handmade local pottery sherds and 1 single handled kyathos). 1 painted stirrup jar (LHIIIA-B), 1 three-handled alabastron (imitation Mycenaean LHIIIB), 1 kylix stem (LHIIIC), other Mycenaean sherds. (Epirus 1a, Epirus 1c, Epirus 4).

• Lithic: 1 amber bead, 7 chalcedony beads, 16 faience beads, 5 rock crystal beads, 3 quartz beads.

• Bronze: 1 cruciform sword (LHII-LHIIIB), 3 daggers, 2 leaf-shaped spear-heads, 1 fiddle-shaped spear-head, rings, spiral disks, 1 limestone whetstone.

• Other finds: made of bone fragment of weapon.

• Chronology: Late Prehistory (LHIIIB).

Bibliography:

Leake 1835: (I) 95-96; Philippson & Kirsten 1956/8: 233; Hammond 1967: 196; Vokotopoulou 1969b: mainly 191-203, figs. 4-6, pls. 27-30; Wardle 1972: 187-189, fig. 14, 190, 194, 197-198, 210-211, 216, 219. 286; Papadopoulos 1976: 277-285. 287-294, 303-304, 307-308, 311-312. pls. 2-5. 7. 8. 10. 16-18. 20; Lagaris 1976/1977: 28-31; Wardle 1977: 158. 182. 185. 187. 191-195. figs. 12.

14; Hope Simpson & Dickinson 1979: 302; Andreou 1994: 239; Tartaron 1996: 62, 85-87, 456; Tsonos 2000: 192-193, 236; Soueref 2001: 38-43. figs. 6. 17. 18. 23, 25, 33, 41, 48, 49, 51, 53-55, 59.

Plates: 42a-d, 43a-h.

Discussion:

Three graves are reported from the area. One of them, a chance find exposed due to heavy winter rains, was excavated in 1968 (Vokotopoulou 1969b). It had a north-south orientation and was the burial of two men and a woman. The grave produced a rich variety of funerary offerings which demonstrate northern connections (beads, rings. spiral disks) and strong Mycenaean influences (stirrup jar, alabastron, sword). as opposed to the burials from Elaphotopos and Kalpaki.

Andreou reported handmade local pottery sherds from Ayios Philippos location, 3 km east of the modern village of Mazaraki. He also mentions remains of building foundations on a hill 1 km north of the village. He attributes them to a settlement related to the grave found and excavated in 1968.

61. Vereniki (also: Βερενίκη)

Topography

• Map reference (GPS):

Degrees: 39.55638888 N / 20.54916666 E

DMS: 39° 33' 23 N / 20° 32' 57 E

UTM: Northing: 4378619.5,

Easting: 461268.97, Zone: 34S

Elevation: 330 masl.

• Demos: Molosson.

• Area (description): lowland zone of Upper Kalamas.

Accessibility: 18 km south of Vrosina village, which itself lies 10 km west of Voutsaras village (the capital of the demos Molloson).

Archaeology

• Degree of work: chance find.

• Architecture: -

• Burials: -

• Pottery: -

• Lithic: -

• Bronze: 1 spear-head.

• Other finds: -

• Chronology: Late Prehistory (LHIIIB).

Bibliography:

Katsadima 1996: 401, pl. 108γ.

Plate: 42f.

Discussion:

A LHIIIB spear-head was reported and handed-in by the priest of the village of Vereniki. It was found next to the church of Agia Paraskeui in the modern cemetery of the village. It was dated to LHIIIB by Katsadima 1996: 401 by comparison with another spear-head published by Vokotopoulou 1969: 195, fig. 6.

62. Zalongo (also: Ζάλογκο)

Topography

• Map reference (GPS):

Degrees: 39.59972222 N / 20.54055555 E

DMS: 39° 35' 59 N / 20° 32' 26 E

UTM : Northing: 4383433.0 ,

Easting: 460553.88 , Zone: 34S

Elevation: 246m.

• Demos: Molosson.

• Area (description): lowland zone of Upper Kalamas, in the area of a steep hill.

• Accessibility: 20km south of Voutsaras (the capital of the demos Molosson).

Archaeology

• Degree of work: chance find.

• Architecture: -

• Burials: -

• Pottery: handmade local pottery sherds (Epirus 1a).

• Lithic: -

• Bronze: -

• Other finds: -

• Chronology: Late Prehistory.

Bibliography:

Hammond 1967: 303; Wardle 1972: 290.

Plates: no drawings / pictures available.

Discussion:

Hammond reported that he had seen handmade local pottery sherds of prehistoric date from Zalongo.

PART 4

THE IOANNINA NOMOS IN LATE PREHISTORY: TOWARDS A DIGITAL APPROACH

4.1 Introduction

It is a commonplace that we live in the 'Information Age'. I would expand this into the 'Digital Information Age'. Information and computing technology and its digital outcomes comprise part of everyday life. People work with computers and data in digital format, own CDs and DVDs, communicate through electronic rather than the conventional mail, and 'surf' the World Wide Web for information, products and enjoyment. Even in disciplines such as literature and classics, the need to be or to go digital in the 21st century has been widely acknowledged. I can think of very few research units and/or researchers without information and computing technology devices used for a wide variety of applications and purposes, from simple word processing to advanced computer programming in special software applications.

Archaeology and archaeological research could not remain unaffected. Archaeologists endeavour to make the most of information and computing technology in their attempts to approach, analyse and discuss past material culture. Departments of archaeology all over the world are establishing and/or developing their own specialised computer laboratories and teaching / research units; archaeological practice (excavation and post-excavation) has already employed information and computing technology techniques and applications, such as electronic databases, computerised spreadsheets and reports, digital photographs, geographical information systems (Bowkett at al. 2001: 52); new software is being developed to serve archaeological practice and training needs, such as the Bonn Archaeological Software Package (BASP), 'a non-profit software for and by archaeologists'[1]; museums and collections are changing their records from paper to digital through electronic databases. Much of this excitement is transmitted on the internet, where if one searches on archaeology, one comes up with thousands, even millions of websites and web pages listing papers, courses, pictures. discussion groups etc.[2].

Archaeology has been offered a new set of digital tools to be used and developed by researchers. With these realities in mind I offer in this part of my thesis an accurate digital map of the Ioannina nomos (1:50000, see map 1 for a circa 1:100000 printout), a detailed and well-illustrated website on the Late Prehistory of the Ioannina nomos as a management, research and teaching tool, and the beginning of a geographical information system (contour, elevation contours, rivers, GPS readings of

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[1] http://www.uni-koeln.de/~al001/basp.html, last visited 20/09/2004.

[2] For an archaeological computing bibliography, see http://piglet.ex.ac.uk/pallas/teaching/bibliog_archaeology.html, last visited 20/09/2004.

findspots / sites, linked archaeological database) on the Ioannina nomos in Late Prehistory.

In Greece, efforts towards the creation and dissemination of digital information and digitisation processes have recently led to the establishment of the Hellenic Digitization Committee (HDC) by the Hellenic Ministry of Culture. The aim is to support and promote the creation of a 'Hellenic digital repository' with a cultural content, and to act as the main forum of a digitisation network. The latter is expected to be achieved through managing coordination and cooperation among individuals, institutions and organizations that would actively participate in the processes of creation and implementation of digital records[3]. The Hellenic Digitization Committee's website / internet portal provides a continuously updated list of relevant, ongoing Greek research and private digitisation projects[4]. It is an information source for every institution interested in issues regarding cultural content digitization. No project on the Ioannina nomos has yet been listed, and I intent this part of my thesis work to comprise the first entry.

In terms of internet resources, the Hellenic Ministry of Culture has recently set up a World Wide Web server named ODYSSEUS. ODYSSEUS hosts a major website designed to offer 'only a fraction of this great adventure that is called Greek Culture, from the antiquity up to our days'[5]. It is clearly acknowledged that new data will keep enriching the programme. The ODYSSEUS website, despite its summary character, is an excellent source for information on issues of Greek history, archaeology and culture, and possesses the important characteristics of being exploitable, expandable, clear and user-friendly. Information on the Ioannina nomos can be found in the sections of the archaeological museum of Ioannina[6] and the 12th Ephorate of Prehistoric and Classical antiquities[7]. Until September 2004, there were no references to the Ioannina nomos in Late Prehistory. It is hoped that the website of this thesis will be linked to ODYSSEUS and fill this gap.

With regard to geographical information systems (GIS), relevant projects are sponsored and administered by the Hellenic Digitization Committee and/or other institutions, such as the Laboratory of Geophysical - Satellite Remote Sensing & Archaeo-environment of the Institute for Mediterranean Studies, based in Crete. This laboratory 'has provided valuable services in the areas of geophysical prospection,

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[3] http://www.hdpweb.org, last visited 20/09/2004.
[4] http://www.hdpweb.org/modules.php?name=Content&pa=showpage&pid=50, last visited 20/09/2004.
[5] http://www.culture.gr/, last visited 20/09/2004.
[6] http://www.culture.gr/2/21/211/21112m/e211lm04.html, last visited 20/09/2004.
[7] http://www.culture.gr/2/21/211/12hepka.html, last visited 20/09/2004.

satellite remote sensing, Geographical Information Systems (GIS) and archaeo-environment'[8]. In Epirus, the Nikopolis Project implemented GIS applications in the Preveza nomos with emphasis on the area of Nikopolis, and has published part of the results (Wiseman & Zachos 2003). The GIS initiated in this research is the first for the Ioannina nomos.

My website incorporates all the site data presented in Part 3, and can serve both as a dynamic management database and an expandable and exploitable research / educational tool for the Ioannina nomos in Late Prehistory. My digitised 1:50000 map of the Ioannina nomos can be the base for many potential applications involving topography, site locations and site distributions (chapter 4.2). My embryonic geographical information system for the archaeology of the Ioannina nomos (chapter 4.3) integrates a set of digital map attributes (contour, elevation isopleths and rivers), a set of GPS readings for all Late Prehistoric sites in the Ioannina nomos, and relevant archaeological information in the form of a database that can be linked with the point dataset. My main aim, apart from contributing to archaeological management, training and site distribution studies, is to establish a digital starting point for further research and development in the Ioannina nomos.

4.2 Website Implementation: A Digital Gazetteer

All data presented in Part 3 have been input into a website, named 'The Late Prehistory of Ioannina nomos: archaeological topography: a site record', coded as LPIN. LPIN is in a preliminary format and is hosted on the server of the Hellenic Society for Near Eastern Studies[9], currently and temporarily accessible through http://www.hsnes.com/NIweb/ Web3/indexNI.html.

The decision to create and implement a website was based upon ideas and criteria which will now be set out. Chapter 4.2.1 offers a brief history of the relationship between the World Wide Web and archaeology, while chapter 4.2.2 briefly discusses the advantages and disadvantages of web publication. Ideas on, and criteria for, evaluating archaeological World Wide Web resources are presented in chapter 4.2.3.

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[8] http://www.ims.forth.gr/index.html, last visited 20/9/2004.

[9] www.hsnes.com, last visited 20/09/2004. I am indebted to the Board of Directors of the Hellenic Society for Near Eastern Studies for having granted me permission to use their server and for the temporary hosting of the website of this research.

Since LPIN is intended to serve as an expandable, exploitable and managerial database, chapter 4.2.4 comprises a brief discussion on the nature of databases in archaeology. LPIN itself is presented in chapter 4.2.5.

4.2.1 World Wide Web and Archaeology: a Brief History

The need to make archaeological results and outcomes available to the public for a variety of purposes, including education, exhibition of finds, and/or further research, is generally accepted. Archaeological practice and ethics require unearthed, analysed and interpreted past material culture to comprise bodies of data (rather than 'capta') disseminated and available to all interested parties. Publishing the results in the best possible way is the conventional end of an archaeological project, so that new knowledge can be presented and further research facilitated. But there is less consensus about the definition of 'best possible'. Until recently, publication consisted simply of printing in various formats: books, periodicals, reviews, collections of photographs and/or drawings, and newspaper articles. Archaeological information used to be accessible mainly in libraries (public and/or personal) and bookshops. Equally, the history of archaeological research until the beginning of the 1990s is to be found in printed material. In the last fifteen years, publishing was offered an advanced electronic dimension by means of the Internet and the World Wide Web[10].

In the 1960s, T. Nelson initiated the concepts of 'hypertext' and 'hypermedia' (Nelson 1965), and in 1990 T. Berners-Lee, an employee of CERN,[11]. proposed the programme 'WorldWideWeb'[12]. In the same year, the first webpage was created and uploaded (http://nxoc01.cern.ch/hypertext/WWW/TheProject.html) and the first web server was up and running (nxoc01.cern.ch). Unfortunately, CERN no longer supports this historical website. In May 1994, CERN organised the three-day 'First International Conference on the World-Wide Web'[13]. The World Wide Web thus became a well established institution and archaeology soon became part of it.

In November 1993 the *ArchNet project* started. This 'World Wide Web Virtual Library of Archaeology' aims to offer a catalogue of all available World Wide Web resources by and for archaeologists - it is still up, running and expanding[14]. In 1994, the first archaeological true web journal appeared in an experimental form, 'On-line

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[10] For a short history of the World Wide Web see http://www.w3.org/History.html, last visited 20/09/2004.
[11] http://public.web.cern.ch/Public/Welcome.html, last visited 20/09/2004.
[12] http://www.w3.org/People/Berners-Lee/WorldWideWeb.html, last visited 20/09/2004.
[13] http://www94.web.cern.ch/WWW94/, last visited 20/09/2004.
[14] http://archnet.asu.edu/faq/welcome.html, last visited 20/09/2004.

Archaeology' from the University of Southampton (Gill 1995). This e-journal is no longer active[15]. In 1995, D. Gill offered an account of archaeology on the World Wide Web, concluding that 'the overall impression is that archaeologists have only just started to use this new technology to the full potential' (Gill 1995). In the same year 'Kapatija', a list of internet sites for the Aegean world in the Bronze and Classical Ages, started collecting websites - this too is still up, running and expanding[16]. In 1996, the first issue of the e-journal *Internet Archaeology* was launched. *Internet Archaeology* is available only on the World Wide Web[17] by subscription, and had published 16 issues by summer 2004. In 1997, the periodical *Antiquity* published an 'Electronic Special Section' that 'sketches what there is and what it means': the World Wide Web itself, electronic journal publishing, electronic communication via emailing and discussion groups, electronic archiving, digital storage media, and relevant consequences in the academic and intellectual world (see Champion & Chippindale 1997 for an overview). Champion's paper in this volume offers an account of the archaeological resources on the Web in 1997 (Champion 1997). Since then, archaeological websites have greatly (and swiftly) increased in number, and the Web and its relations and applications to archaeology have been discussed and analysed in many papers (Hodder 1999; Brandherm 2000; Wace & Condron 2002; Huggett 2004; Denning 2004; Richards 2004). Nowadays, the great variety and range of websites of archaeological character include online courses[18], discussion fora[19], online companions[20], e-publications[21], and online databases (see e.g. Bevan & Evely 2003[22]).

4.2.2 World Wide Web and Archaeology: Advantages and Downsides

Electronic World Wide Web publication offers archaeologists the opportunity to publish the results of their fieldwork and other research in a rapid and cost-effective manner. There is the potential for even greater benefits if such publications can be made easily accessible and usefully searchable. In this chapter, I briefly put forward and discuss the benefits and the drawbacks of Web publication in archaeology, before

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[15] http://avebury.arch.soton.ac.uk/Journal/journal.html, no longer active.
[16] http://www.people.ku.edu/~jyounger/Kapatija/, last visited 20/09/2004.
[17] http://intarch.ac.uk/journal/issue1/index.html, last visited 20/09/2004.
[18] For an example see http://projectsx.dartmouth.edu/history/bronze_age, an online course on the Prehistoric archaeology of the Aegean, last visited 20/09/2004.
[19] For an example see AeageaNet, http://www.people.ku.edu/~jyounger/aegeanet.html, last visited 20/09/2004.
[20] For an example see http://www.staff.ncl.ac.uk/kevin.greene/wintro/home.htm, the online and revised version of Greene (2002), last visited 20/09/2004.
[21] For an example see *Internet Archaeology*, http://intarch.ac.uk, last visited 20/09/2004.
[22] http://aegeanstonevessels.org, last visited 20/09/2004.

proceeding to present the website of my research on Late Prehistoric sites and findspots in the Ioannina nomos (chapter 4.2.5).

Websites are commonly perceived as a medium used mostly to advertise services and products, and to provide information for the general public (Gray & Walford 1999). In terms of research, the Web is also a publishing zone for information and results. The main practical advantage of Web publication is its low cost, an important consideration given the expense involved in conventional archaeological publication which usually requires a large quantity of illustrations. Web publications may include unlimited amounts of visual material of all kinds without paper-oriented worries such as paper quality and/or size, overall cost and print run. Furthermore, they have the ability to incorporate moving images, such as videos and virtual reality graphics.

The speed and directness of publishing are a second advantage. Paper-oriented publications usually come out long after the completion of their preparation. Even a fast publication, such as the proceedings of the annual Computer Applications in Archaeology conference[23], takes time (in this case, proceedings usually appear in the year after the conference was held). At the other end of the spectrum, the annual archaeological report of the Hellenic Ministry of Culture, the *Αρχαιολογικόν Δελτίον*, is usually published after a gap of six years: the issue published in 2003 covers archaeological work in year 1997. Electronic World Wide Web publications are available in much shorter periods: 'the speed of publication is such that an archive report, Newsletter and context and other data are available on the Web site 3-4 months after the end of each excavation season' (Hodder 1999). As soon as a publication is ready in the computer, uploading to a World Wide Web locations merely requires a password and a few minutes. Interested parties are thus able to keep in touch with the most recent findings and advances.

Greater audience size and diversity form another advantage of Web publication, although it is an advantage which opens up new challenges in terms of design and presentation. A website is accessible from wherever a computer is connected to the Internet, removing the need to travel to a specialised library or bookshop. Hodder (1999) reports that very few copies of the first monograph on the Çatalhöyük project (Hodder 1996) were sold (mainly to specialist libraries), while in one month alone (November 1998) the project website had an average of 107 visiting users (not hits) daily, and the total number of user sessions was 2,306 with average session length of 10

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[23] http://caa.leidenuniv.nl/proceedings/proceedings_contents.htm, last visited 20 09 2004.

minutes. Such numbers could not be expected of library readership. Hodder concludes that the website has become by far the most effective way of transmitting information about archaeological research at Çatalhöyük.

World Wide Web publications can be edited, reviewed and renewed frequently to provide up-to-date information. They may include sections of peripheral character, of specialist and public perspective, site data and archives, diary entries and recording forms, alternative views, discussion lists, and comment forms allowing feedback from the public. Interested parties can evaluate and study the data, and can offer suggestions, note weaknesses and contribute towards improvements and research progress by sending their comments via an email or a form. It is also worth noting that web publication gives considerable freedom and responsibility to the readers to evaluate information, construct their own pathway through the text, and guide publication strategies through relevant feedback. In conventional paper publishing, the balance of authority is much more in favour of the author (hence the specific genre of the academic review).

By virtue of their interactive and readily searchable character, World Wide Web publications can also be developed above and beyond paper publications to serve various educational purposes (training in archaeological practice and research, for example, museum educational programmes, or school curricula).

Potential disadvantages in using the World Wide Web for archaeological publication focus around issues of stability and long term maintenance (Hedstrom 1997; Aravani 2004). The maintenance of websites requires resources - hardware and software as well as time and skills. Furthermore, unlike printed books which are complete entities, websites are dynamic bodies, susceptible to continuous change and update. Older versions are not always kept on servers, since their maintenance would require extra space and work. The latest edition / update of a site may be readily available, but earlier editions often disappear, and cannot therefore be referenced or checked. Websites also face the danger of collapse and/or complete loss of data by computer generated viruses and energy problems.

Moreover, unlike printed material, websites present a number of input and output problems. Output on one computer monitor will not always be exactly the same as that on another. Different operating systems (Microsoft Windows, McIntosh, Linux), various web-browsing programmes (Internet Explorer, Netscape Navigator, Mozilla Firefox), and screen size and settings may result in slightly, or considerably, different outcomes. The application of certain file formats, such as html documents and pdf files,

has been put advanced to address these problems. Issues of accuracy and calibration surround input and output, especially with regards to digital imaging. There are particular processes and problems involved in successfully creating digital images in different formats (raster, vector, animated), delivering them to the Web, and effectively using them. Specialist institutions have been established to solve these problems: the Technical Advisory Service for Images (TASI)[24] was founded in 2002, funded by the Joint Information Systems Committee (JISC),[25] to tackle these themes and provide consultancy and training.

Another issue relates to quality of content, since it is easy for the average computer user to create and implement a website. Websites therefore need the back up of an institution and/or an alternative means of checking content quality. Content should always abide by average connection and speed realities. A few years ago, large quantities of visual material (let alone video files) would cause very slow access for most computer systems. Current technological advances, especially in the western world with the applications of broadband services, allow faster access. It should also be noted that while websites may aim to be up-to-date in terms of technological advances, they should also respect older hardware and software systems.

Copyright and issues of plagiarism that may arise from the use of Web publications remain vexed matters. Controlling this must be a major concern, but current legal frameworks and national conventions are still based on paper publication. Detailed referencing and the introduction of login names and passwords may serve to control access and monitor users' actions. A good example is the Beazley Archive Pottery Database[26]. Certain websites have tackled this problem by deactivating editing commands: the website of the *American Journal of Archaeology*[27], for example, offers the printed journal in pdf format with the copy, paste and select commands deactivated.

Access and accessibility depend on a variety of factors. Accessibility requires user-friendly entry and search paths. Documentation must be clear and approachable, especially in web databases, since it is unlikely that all users could understand directly the recording mechanisms employed in archaeological practice and the details recorded. This need for standardisation has had the great benefit of forcing us to address issues of metadata. The whole recording and analytical process has thus benefited. Websites' builders must have the audience in mind. The case of the language used is a good

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[24] http://www.tasi.ac.uk/about_us.html, last visited 20/09/2004.
[25] http://www.jisc.ac.uk/, last visited 20/09/2004
[26] http://www.beazley.ox.ac.uk/test/Vases/ASP/default.asp, last visited 20/09/2004.
[27] http://www.ajaonline.org/, last visited 20/09/2004.

example. English may be accepted as an international language, but is it ethically right for websites focused on the archaeology of a non-English speaking country to use only a language other than that of the country in question? For example, I would prefer the Çatalhöyük website[28] to have been offered in both English and Turkish. This of course requires extra effort and resources in terms of website management, maintenance and update. Another example of audience-oriented thinking relates to structure and presentation. Most websites are intentionally or incidentally aimed at adults. Prior target-group thinking is necessary before web design and presentation oriented decisions are taken and applied.

People's attitudes towards the Web is another interesting theme. Most people browse the Web, reading headlines rather than whole texts and following a variety of pathways through the site, rather than the simple linear development of the printed text. As noted, the average duration of visits to the Çatalhöyük website in November 1998 was 10 minutes (Hodder 1999). The website of the Hellenic Society for Near Eastern Studies[29] receives visits of an average 6-minute duration (statistic based on January – August 2004)[30]. Some users (myself included) prefer to print material from the Internet rather than reading directly from the screen (not least for reasons of health and comfort).

Overall, for centuries, the right place to look for the finest archaeological knowledge has been in some kind of printed book. The World Wide Web now offers a new dimension. In the 19th century, archaeologists would print books themselves to communicate their own work and ideas. Advances in printing technology in the 20th century led to the establishment of periodicals and regularly published archaeological reports. Transport and communication advances later in the 20th century facilitated meetings of specialists, conferences, site and library visits, and a wide range of projects requiring travel on an unprecedented scale. The next step has been the Internet and the World Wide Web with all its information oriented provisions, resources, services and abilities. Whether it is seen as a panacea or a necessary evil, the Web is a reality, and archaeologists should take advantage of it.

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[28] http://catal.arch.cam.ac.uk/, last visited 20/09/2004.
[29] http://www.hsnes.com/, last visited 20/09/2004.
[30] I would like to thank the Board of Directors of the Hellenic Society for Near Eastern Studies for allowing me to use this statistic.

4.2.3 World Wide Web and Archaeology: Evaluating Websites

Evaluating a website involves a number of issues and sets of criteria that have been extensively discussed elsewhere (see Smith 1997; Alexander & Tate 1999: 7-17; Cooke 1999; Tillman 2003). I will not therefore revisit these arguments. A good overview can be found in the 'HTML Hell page'[31], written by E.S. Raymond, author of the *The Art of UNIX Programming* (Raymond 2004). Raymond examines websites in terms of (a) design, (b) content, (c) style, and (d) extension, with content being the most important aspect:

(a) design: websites must be simple, easy to use, and straightforward. Blinking text, flashy and garish backgrounds, unreadable text/background combinations, unreadable font size, unnecessary Java scripts, pop-up windows, and background music and/or video files result in slow-loading and/or needlessly frustrated users. Design is a carrier of content, rather than an end in itself.

(b) content: the most important aspect of a website. Content attracts users and makes a visit to website worthwhile and profitable. Raymond considers guestbooks unnecessary ('if we have something to say to you, we'll send you a mail'), and criticises hit counters as pointless from the user's perspective (see also Sturges & Griffin 2003: 224 for another view). Web-designers should check and remove stale links and avoid having pages forever under construction.

(c) style: simplicity and to-the-point text is favoured. Futile extra pages, pointless graphics, over-advertisement and unnecessary cookies should be avoided. Style works in a similar way to design: it should be a carrier of content, rather than an end in itself (see Rettig 1995 for an alternative view).

(d) extension: certain webpages are extended mainly by means of frames. Frames, especially space-consuming bordered frames, should be used with caution, if at all, since they may cause confusion and frustration.

Cooke points out that effective resource evaluation should be based on full understanding of the needs of communities of users (Cooke 1999). Internet resources and evaluation criteria for humanities have received limited attention (Merrill 2000). A recent paper tackling the issue of specific criteria for the evaluation of archaeological World Wide Web resources (Sturges & Griffin 2003) proposes an evaluation tool designed to meet the specific needs of archaeology on the Web. Twenty websites were chosen for evaluation. The authors proposed the following criteria (Sturges & Griffin 2003: 224-228):

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[31] http://www.catb.org/~esr/html-hell.html, last visited 20 9 2004.

- Scope (including subject range, scholarly level, and format of material),
- Purpose and audience (including statements of aims and objectives, target groups. hit counters, and 'Frequently Asked Questions' sections)
- content (including accuracy, authority, copyright, currency, uniqueness, links, quality, and overall quality),
- graphic and multimedia design,
- workability (including user friendliness, computer environment, searching. metadata, browsability and organization, interactivity, and connectivity).

Sturges & Griffin (2003) represents the first step towards an overall model for the evaluation of archaeological World Wide Web resources, and further testing needs to be undertaken towards that goal. For the needs of my thesis website, special emphasis was put on content, user friendliness and copyright.

4.2.4 Databases, Archaeology and the World Wide Web: Expandable and Exploitable Tools for Research, Resource and Management

Databases[32] are data collections put in certain orders for certain purposes - a student record of attendances, a shopping list or a telephone directory, for example. The World Wide Web itself can be seen as a huge database full of retrievable information of all sorts. Databases usually address a certain theme; this is called its universe of discourse and is the database's overall title. Data are of different types depending on their nature and qualities. Various pieces of software for storing, managing and manipulating such data are termed database management systems (DBMS). A popular and widely available DBMS is Microsoft Access. All information in the Gazetteer presented in part 3 have also been input into a Microsoft Access database to be found in the CD-ROM (ioannina.mdb).

Within archaeology, we mainly encounter excavation databases and sites and/or monuments records. *Excavation databases* relate to the need and wish to record excavation work on a computer. This subject matter appeared in the literature early on (Laflin 1974), and is still a matter of discussion and research. Although many suggestions have been made, no agreement has yet been reached on an ideal, absolute system for the recording of excavations. These suggestions involve integrated systems for excavation analysis (Stead 1988; Andresen & Madsen 1992; Rains 1995) and the ArchéoDATA System, a French-designed system for European archaeological documentation (Arroyo-Bishop & Lantada Zarzosa 1992). *Site and/or monuments*

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[32] On issues related to databases in archaeology, I own a great deal to Dr Kris Lockyear. This section has been inspired by his course and handouts on databases in archaeology at the Institute of Archaeology, University College London. Thanking him for his advice, his teaching and our discussions is the least I can do. Needless to say, all possible mistakes here are exclusively mine.

records are central in archaeological databases, a fact that is evident from the many articles on the subject in the volumes of the annual congress on Computer applications and quantitative methods in archaeology[33]. A recent development in sites and/or monuments recording has been the progress of geographical information systems, exemplified by approaches to the monuments of Jordan (Palumbo 1993). For more on geographical information systems, see chapter 4.3.

Archaeological databases can also be divided into the following types:

- Research databases, often of personal character
- Resource databases
- Management databases

Scholars usually construct *research databases* for a specific project. Possibly all scholars have at some time created such databases in paper and/or electronic format, in order to record information, answer specific research questions, and produce certain outputs. Research databases have a personal character, since they are adapted to individual needs and specific research questions. Issues of inputting, management, storage and output are satisfactorarily resolved as long as they satisfy the needs of the scholar(s) who have built and/or used the database. Implemented systems of manipulation and retrieval are very specific to the tasks at hand.

A *resource database* is one collected with the intention that the data will be useful to a wider group of interested people, such as the computerised British Archaeological Bibliography (Heyworth 1992), or the Perseus Digital Library[34]. Resource databases are usually more complex and much larger, since their creation and implementation involves the eventual end-users' potential needs. These needs have to be assessed (even guessed) by the builder(s) of a resource database. Issues of interface are raised, since it is likely that many users of the database will be unfamiliar with either handling particular databases or database systems. Builders of database systems have to provide some form of user-friendly interface, to enable casual end-users to work effectively. Simple tasks, such as running queries and producing printed reports, can prove confusing, frustrating and disappointing if end-users get into a web of screens and commands.

A *management database* is one specifically set up to manage some set of entities, such as museum collections and library catalogues. These databases can often be used for research, but they have a specific management function to fulfil.

The classes described above give a general idea of the variety of databases in archaeology and the tasks they are expected to perform. It should be stressed that they are not necessarily exclusive, nor exhaustive. Resource and management databases can be used for research, while research databases can often be part(s) of a wider resource.

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[33] see http://caa.leidenuniv.nl/proceedings/proceedings_contents.htm, last visited 20/09/2004, for contents of all proceeding since 1990.

[34] http://www.perseus.tufts.edu/, last visited 20/09/2004.

even management database. The LPIN database and website are mainly of resource and managerial character, which can be adapted and enhanced to serve different research needs.

A database consists of different entities. An entity is 'any distinguishable object that is to be represented in the database' (Date 1995:10) - in other words, all different categories recorded plus their attributes. Data entries need to be clear and meaningful. A point of major significance is data documentation. It is important to record the 'meaning' of each attribute and its defining criteria. Although the meaning of an attribute may seem self-evident from its name, it is likely to be more self-evident to the builder of the database than to others, and at the time of its creation that at a later stage. An example is counts of pot-sherds from a site. The common assumption is that every single pot-sherd forms one unit - but how do we count 10 broken pieces of the same pot? Should that be 1 or 10? Data documentation has to clarify such points according to the database's aims. Detailed documentation is necessary when databases make use of codes, either to speed up data entry or to simplify the construction of queries. Codes need to be clearly defined and stored with their meanings attached.

Databases of all formats can be seen either as static or dynamic. In a *static* database, data were collected and published for a specific purpose and cannot now be changed. Examples derive from many archaeological publications: when a site is excavated and published, all material unearthed forms an exhaustive and complete database to which no further records can be added. This argument, of course, does not preclude future modification and expansion. We consider a database *dynamic* when there is an intention that it never be considered complete, but should always be expanded. Museum collection databases are a good example, since new items enter and are recorded constantly. Individual criteria and research aims define whether a database is seen as static or dynamic. A group of pots in a museum is seen as static by the researcher but dynamic by the museum collection manager. The LPIN database and website are dynamic, but they can be considered static if seen as a synopsis of the archaeological work related to the Late Prehistory of the Ioannina nomos undertaken by 2003.

Computerised databases may create problems with maintenance, updating and archiving. Data has to be transferred on occasion to new hardware and new software. Both of these tasks can be extremely troublesome (Gordon 1991), and require adequately trained personnel in the use of the system. If the data is stored in well-designed tables and in a commonly recognised format, then the data itself usually transfers without too many problems, although rarely entirely smoothly. The only option is that data should be moved from one system to another, since computer technology advances very rapidly, and hardware and software become obsolete.

In terms of design, modelling, implementation and information retrieval, databases are approached through extensive bodies of theory. Design and

implementation take into account theoretical and practical issues on relationships between entities (ways in which entities are inter-linked). Three basic degrees of relationship are usually applied (one-to-one, one-to-many and many-to-many): entity relationship diagrams offer visualised simplified summaries of the way different entities are linked. Processes of normalisation (five consecutive 'normal forms') fine-tune these relationships and secure the database's workability. Information retrieval is usually guaranteed by Structured Query Language applications (SQL); series of commands allow users search, select, and retrieve specific information from the entities of a database (see Carter 1992 for a full account of SQL programming; also see Date 1995 for relationships and normalisation processes in databases).

Many relational SQL databases are available on the World Wide Web, the most common example being online library catalogues. A good example of an online SQL relational database of archaeological character is the 'Stone Vessels of the Bronze Age Aegean' project[35] (Bevan & Evely 2003). Bevan & Evely offered a detailed and well-illustrated research and teaching search and retrieval engine for a class of objects (stone vessels), as well as a database design adaptable to other classes of objects. The LPIN website was designed and implemented with a main focus on presenting the data (a 'what you see is what you get' logic) rather than on searching and retrieving. The latter processes are tackled by hyperlinks and individual browsers' search commands and prompts. It is hoped that future research will provide databases similar to that of Bevan & Evely (2003) for specific classes of Late Prehistoric artefact from the Ioannina nomos, such as lithics or bronzes. Such future work would form a welcome addition to LPIN's contents and expandable character.

4.2.5 The LPIN Website: 'The Late Prehistory of the Ioannina Nomos. Archaeological Topography: a Site Record'

As noted, the website of this research has been named 'The Late Prehistory of the Ioannina Nomos. Archaeological Topography: a Site Record' (coded LPIN) and is accessible through the URL http://www.hsnes.com/NIweb/Web3/indexNI.html. LPIN in its current state (20/09/2004) consists of 1688 files and/or folders contributing to 108 webpages.

The concept behind the venture is straightforward. It is to create an electronic equivalent of an up-to-date Gazetteer of Late Prehistoric sites and findspots of the Ioannina nomos on the Web, which can be accessed by the usual Internet connections and services. Aims and objectives relate to offering a user friendly informational tool of expandable and exploitable character for research, archaeological management, and teaching. Scholars, students and interested individuals are encouraged to use, revise and

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[35] http://aegeanstonevessels.org, last visited 20/09/2004.

add to its contents. It is hoped that a continuously updated version will aid the work, and help to fulfil the mission, of all institutions working on the area's Late Prehistory, mainly the 12th Ephorate of Prehistoric and Classical Antiquities, the newly established Archaeological Institute of Epirote Studies (see chapter 1.5.2), and the University of Ioannina.

LPIN's design is preliminary in character and accords with the design of its temporary host, the website of the Hellenic Society for Near Eastern Studies[36]. It was designed using Microsoft FrontPage 2002. In its current state it is best viewed by Microsoft Internet Explorer in Microsoft Windows XP, with a screen resolution set to 1024 by 768 pixels. Encoding the web browser in Greek may be required for viewing Greek characters. The command path in Microsoft Internet Explorer is View → Encoding → Greek (Windows) or Greek (ISO). LPIN's final implementation and permanent hosting is expected as soon as relevant funds and support for its maintenance and updating are secured[37]. For presentation of LPIN's source material and further comment, see Part 3 of this thesis. Plates 44-49 provide some printouts of LPIN's main webpages reduced fit onto an A4 page (hence the fonts appear much lighter than on the screen). A clearer impression of final appearance can be gained by viewing LPIN on the Web via the aforementioned hyperlink, and/or individual files in the CD-ROM folder 'NIweb\web3'.

4.2.5.1 Homepage

LPIN's homepage briefly provides the basics of the whole website. The overall title 'The Late Prehistory of the Ioannina Nomos' will be present on all LPIN webpages. The subtitle 'Archaeological topography: a site record' specifies LPIN's universe of discourse. The notion of archaeological topography and the concept of site in this thesis are discussed in chapters 3.1.2 and 3.1.3 respectively.

The left part of the page will also be present on all LPIN webpages to secure convenient navigation. It comprises LPIN's hyper table of contents, with hyperlinks to the homepage, the webpages of the seven districts, the webpages of site index and references, and LPIN's webinfo page. The main body of the home page briefly presents LPIN's content, aims and objectives, target audience and structure. A digital image of

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[36] http://www.hsnes.com, last visited 20/09/2004.

[37] I would like to thank Dr K. Zachos and Dr F. Kefallonitou, Ephors of Antiquities (12th Ephorate of Prehistoric and Classical Antiquities, and 8th Ephorate of Byzantine Antiquities respectively) for having already expressed their interest and support towards this aim.

the lake, the island and the modern city of Ioannina has been put there for aesthetic reasons.

Plate 44 provides a printout of LPIN's homepage. See also file NIweb\Web3\indexNI.html on the CD-ROM. To visit LPIN's homepage online, use the URL http://www.hsnes.com/NIweb/Web3/indexNI.html.

4.2.5.2 Districts Webpages

All district pages are illustrated with a map of the Ioannina nomos indicating the borders of its demoi and koinotites (dotted line, see chapter 1.5.2), the districts (see chapter 3.2.1), Late Prehistoric locations in the Ioannina nomos, and the site numbers serving as map reference points. The district in question is highlighted. I designed this map in Adobe Photoshop 5.0, basing it upon the GPS measurements and digitisation work described in chapter 4.3. It can also be seen in plates referring to districts (pls. 12a, 20a, 24a, 28a, 38a, 39a and 41a).

The map is followed by the list of locations of Late Prehistoric evidence. For each location the main name is given in bold font with a hyperlink to the site/findspot's webpage. The main name is accompanied by any other names by which the location is known in parentheses (for site number and names, see chapter 3.2.3.1 and table 3.2.2a). Square brackets provide the map reference number and a hyperlink to plates with photographs and/or drawings, if available.

Plate 45 provides a printout of the 'Upper Kalamas district' webpage as an example. To visit this page online, use the URL http://www.hsnes.com/NIweb/Web3/UPPER%20KALAMAS.html. See also file NIweb\Web3\UPPER KALAMAS.html on the CD-ROM.

4.2.5.3 Sites / Findspots Webpages

Every location of Late Prehistoric evidence has a separate webpage. Entries include topography, archaeology, names, bibliography (cross referred to the references webpage), a hyperlink to plates with photographs and/or drawings if available, and brief discussion. For entries and data fields, see chapter 3.2.3.

Plate 46 provides a printout of the 'Gribiani' webpage as an example. See also the file NIweb\Web3\Gribiani.html on the CD-ROM. To visit this page online, use the URL http://www.hsnes.com/NIweb/Web3/Gribiani.html.

4.2.5.4 Plates Webpages

A separate webpage for photographs and/or drawings accompanies some sites and findspots. It must be noted that plate pages include only drawings and photographs that have been published. All photographs and drawings are accompanied by a reference to be found in the references webpage. For obvious reasons, I avoided using and uploading unpublished material.

Plate 47 provides a printout of the 'Mesogephyra plates' webpage as an example. To visit this webpage online, use the URL http://www.hsnes.com/NIweb/Web3/Mesogephyra_plates.html. See also file NIweb\Web3\Mesogephyra_plates.html on the CD-ROM.

4.2.5.5 Index and References Webpages

A site / findspot name index webpage and a references webpage are accessible via hyperlinks on every page of the LPIN website. The site / findspot name index webpage plays a major role in enhancing user friendliness and website navigation. The index is in both the Latin and the Greek alphabets with each letter bookmarked (a click leads the user to entries beginning with the chosen letter), which speeds and facilitates information retrieval. The references webpage offers full references to works mentioned throughout the LPIN website, and aims to facilitate research and further information retrieval.

Plate 48 provides a printout of the top of the site / findspot name index webpage (pl. 48a) and the top of the references webpage (pl. 48b). For the site / findspot name index webpage see NIweb\Web3\POGONIindex.html on the CD-ROM. For the references webpage, see NIweb\Web3\Bibliography.html.

To visit the site / findspot name index webpage online, use the URL http://www.hsnes.com/NIweb/Web3/POGONIindex.html.

To visit the references webpage online, use the URL http://www.hsnes.com/NIweb/Web3/Bibliography.html.

4.2.5.6 Web Info and Copyright Webpages

Web design and implementation information are given in this webpage, together with a statement of copyright, hosting information, and an email address for further information, suggestions, comments, improvements and ideas. This page is accessible via a hyperlink in the bottom left corner of every page of the LPIN website. I avoided

making and uploading a comment form following Raymond's view above (chapter 4.2.3).

Plate 49 provides a printout of the webinfo webpage. To visit this page online. use the URL http://www.hsnes.com/NIweb/Web3/Web_info.html. See also file NIweb\Web3\Web_Info.html on the CD-ROM.

4.3 A Digital Map of Ioannina nomos: towards a Geographical Information System (GIS)

This chapter presents the second contribution of my thesis in terms of digital data for the Ioannina nomos - the creation of a digital 1:50000 map derived from the analogue map sheets used by archaeologists operating in the area. With this map as a base, a simple GIS project was implemented showing the locations of all sites of Late Prehistoric evidence in the Ioannina nomos discussed in the gazetteer of part 3 (chapter 3.3).

No digital maps of the Ioannina nomos as a whole have previously been available, let alone on such a large scale. Only maps of certain areas of special interest for walkers and mountaineers have been digitised and made available by Anavasi editions[38]. These areas are in the western part of the nomos (the Pindus Mountain chain); they are the so-called 'Pindus Zagori', 'Tzoumerka Karkaditsa Peristeri' and 'Pindus Valia Kalda' areas[39].

In terms of the Late Prehistory of the Ioannina nomos, the GIS project based upon the digital map offers accurately located sites and findspots. The proposed GIS is adaptable, and can be used for detailed spatial analyses in other research projects focused on Ioannina, which need not necessarily be archaeological. Since it is the first large scale, digital GIS-applicable map for the whole of the nomos, its applications and possible uses are many - archaeological management of the Ioannina nomos. for example, or teaching and archaeological training.

After some introductory comments on GIS and archaeological practice (chapter 4.3.1), I briefly discuss issues and limitations in relation to maps and map digitisation. with special reference to the cartographic projections used in Greek maps (chapter 4.3.2). The process of acquiring appropriate analogue maps, creating the digital map and implementing the GIS follows (chapter 4.3.3).

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[38] http://www.mountains.gr/indexen/, last visited 20/09/2004.
[39] http://www.mountains.gr/maps_topo50.html, last visited 20/09/2004.

4.3.1 Introductory Comments: GIS and Archaeological Practice

Geographical Information Systems (GIS) form a recent and rapidly growing method of spatial research, which has moved from being the domain of computer specialists into general use by all manner of people dealing with topographical and topological data (geographers, topographers, archaeologists). Since archaeological practice and spatial analysis are interrelated notions (Hodder & Orton 1976), and 'space is a medium in which human beings play out their activities' (Llobera 1996: 613), GIS applications and outcomes are increasingly forming important aspects of archaeological practices and archives.

A widely accepted definition of a GIS was advanced by Burrough: GIS is 'a powerful set of tools for collecting, storing, retrieving at will, transforming and displaying spatial data from the real world for a particular set of purposes' (Burrough 1986, as quoted in Burrough & McDonnell 2000: 11). A more computer-related definition would be that GIS is an advanced database for spatial data. It is worth using GIS when it is necessary to analyse a large number of data whose locational attributes are important. Major hardware components are needed for GIS applications: a powerful computer (advanced processor and Random Access Memory capabilities), additional storage media (extra hard disc drives and optical CD-ROMs), graphical input devices (digitiser, scanner, digital camera) and graphical output devices (visual display units, plotter, printer).

GIS began to be developed from computerised aided design packages and computer-aided manufacturing packages in the mid-1980s (Burrough & McDonnell 2000: vii). Soon afterwards, GIS applications with archaeological components began to appear (Allen et al. 1990; Castleford 1992; Lock & Stančič 1995). The annual international congress *Computer Applications and Quantitative Methods in Archaeology* has had sections devoted to GIS applications since 1992 (Andresen et al 1993: 91-137), including GIS projects related to archaeological practice in Greece (e.g. Sarris et al. 2002). GIS and archaeology online papers started appearing in the late 1990s[40]. Since the year 2000, general publications on GIS and archaeology have increased remarkably (Gillings et al. 2000; Wheatley & Gillings 2002; Zubrow 2003). In 2003, the first online journal was established, the *Journal of GIS in Archaeology*, volume 1; its papers address 'uses of GIS in various archaeological contexts and

[40] http://www.esri.com/industries/archaeology/papers.html, last visited 20/09/2004.

scales—from the excavation unit to the globe'[41]. It is worth mentioning that books on GIS in archaeology are advertised well in advanced (Jones forthcoming 2004; Mehrer & Wescott forthcoming 2005; Conolly & Lake forthcoming 2005). In the archaeology of Greece, projects relating to archaeological practice and cultural management have started incorporating GIS applications in their routines and tasks. Examples are the Lasithi Project, East Crete (Sarris et al. 2002), the Kythera Project (Conolly 2003; Bevan 2003), the Nikopolis Project (Wiseman & Zachos 2003), the Stavros Valley Project (Whitley 2002/2003a), and the ancient Messini Project (Tokmakidis et al. 2004).

The power of GIS lies in its ability to link objects on a digital map to an electronic database, combining the graphical display of data with database query and analysis functionality. Objects are grouped into layers, which can be turned on or off for mapping. GIS combine database characteristics (for collection, storage and retrieval of information), computer-aided design, computer-assisted cartography, and engines for spatially referenced data manipulation and analysis. GIS is implemented either using a single software package, such as the ArcGIS, MapInfo, GRASS, and Idrisi, or combining individual software packages for databases, map-editing, data analysis and display. It should be noted that GIS packages differ considerably in their strengths and weaknesses and they also differ in the techniques that they use for implementing different functions and tasks (see Jones 1997: 39-58).

With regards to implementation, GIS applications can be summarised in the five steps below (for a detailed account see Burrough & McDonnel 2000):

1. *Data capture*. The vital stage of obtaining data in a form that can be input to a GIS. Spatial data in electronic form are nowadays prepared and available free or with a fee from a number of sources, such as the Internet, mapping companies, governmental and public institutions (e.g. the Ordnance Survey) and/or several digital information archives (e.g. the United States Digital Map Library[42]). In most cases, the most important piece of data is a digital map that would serve as a base for the system's implementation. Although the availability of digital GIS applicable data has greatly increased and been continuously developed, researchers and organisations commonly have to accumulate their own digital data sets relating to subject matter specific to their research purposes, activities and questions. The stage of data capture stage is usually the most expensive, whether in terms of the cost of the purchase, or the personhours required to acquire data firsthand or convert it from another source.

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[41] http://www.esri.com/library/journals/archaeology/, last visited 20/09/2004.
[42] http://www.rootsweb.com/~usgenweb/maps/, last visited 20/09/2004.

2. *Preliminary data processing.* This covers a wide range of operations and tasks addressed to making digital data suitable for subsequent query and analysis. These may include functions that apply changes of co-ordinate system, changes of classification and changes in data model according to the software used and the types of questions asked. Such tasks may involve processes such as vectorisation, rasterisation, image classification and triangulation, depending on the specific needs, the data and/or the research questions of the GIS builder.

3. *Data storage and retrieval.* Spatial data files, especially maps and digital photographs, are of considerable size in terms of binary digital space. Therefore they require advance storage electronic media, as well as a powerful management system for information handling, querying and retrieval. In GIS, this often results in an approach involving relational database methods for the largely non-spatial attribute data, and specialised geometric data models for the spatial data.

4. *Spatial analysis.* This is the main purpose of GIS. Types of analysis are project oriented and relate to specific research questions, needs and limitations. Relevant techniques are therefore more clearly described in practice than in theory.

5. *Graphical display and interaction.* Different GIS packages offer different display and interaction facilities, including two-dimensional and three-dimensional viewing, image processing capabilities, layers, and database-related output commands. Advanced graphical output devices, such as plotters, large screens and projectors, are usually needed to convey information accurately.

The work presented in this chapter aims to advance GIS applications related to archaeological practice and research in the Ioannina nomos. Its aim is to offer a digital 1:50000 map of the nomos to serve as a base for other GIS applications. The choice of scale came after long discussion with archaeologists operating in the area (mainly those working for the 12th Ephorate of Prehistoric and Classical Antiquities and the 8th Ephorate of Byzantine Antiquities). Therefore, my work concentrated on the first of the steps described above (data capture). I had to collect digital data firsthand and to convert analogue format data to digital format. In terms of software, I have mostly used ESRI ArcView GIS 3.2, with certain tasks being undertaken in Microsoft Excel 2002, Microsoft Access 2002, and TopoView 2.

4.3.2 Map Digitising: Limitations and Other Issues

Digital maps, as well as site photographs, present two major limitations. The first one is cartographic and relates to issues of distortion. The second one is of computing character and relates to decision making on data format (mainly a choice between raster and vector, or both).

Distortion concerns co-ordinate systems. Space is a three-dimensional entity while a map is two-dimensional. Since maps represent the three-dimensional reality in a two-dimensional form, a degree of distortion is inevitable. Therefore, unavoidably, every map in analogue form is to some extent distorted. The degree of distortion becomes greater due to the possibility of certain types of error, such as those resulting from inaccuracies in the original survey data. It should also be noted that certain maps have such inaccuracies intentionally: in order for map making companies to protect their copyrights; errors are introduced in order to detect when offences have occurred. The Road editions maps are an example[43]. Such flaws are implicit in the map source and cannot be rectified without obtaining and applying data from other sources.

Further distortion is caused by the digitising process, and digital maps can be assumed to include errors of some sort. These arise from a combination of inaccuracy in the source-map as noted, and from the limitations of the digitising device (scanner, digitising tablet, digital camera) and the computer system in use. Human error in the digitising process further increases distortion: the operator may fail to position the cursor accurately over the graphic object to be digitised or miss objects from the map, or wrongly enter the identity of the object, especially after long hours at work (Jenks 1981; Jones 1997: 86-89).

The second limitation derives from the way spatial data are created and stored. Although all computer graphics are simply organised pixels, computer images are created and stored in two different ways. Some drawing and digital imaging programmes (e.g. Photoshop, CorelDraw, PhotoPaint) operate by creating a kind of extremely dense mosaic on the computer screen: for each pixel on the screen there is a bit of data indicating the colour assigned to that pixel. These programmes allow the user to draw very naturally with a mouse or stylus, and they can operate very quickly. However, the drawing is based on the individual pixels; it must be edited by altering individual pixels, not lines, circles, or other items in the drawing. Such drawings cannot easily and accurately be changed in size. Images from such a programme are referred to as *raster images*, and the resulting images are sometimes called bit-mapped, though that

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[43] http://www.oreivatein.com/page/coop/road_editions/e_roaded.htm, last visited 20 09 2004.

term implies an absence of colour. Raster images are all input by a scanning process. Other packages, e.g. AutoCAD, operate in a different way. Drawings are created and stored as groups of entities (lines, circles, arcs, etc.) with starting points (relative to a user-defined grid independent of the screen), orientation and length; such lines are called vectors. The entities in these drawings are dependent upon formulae, not pixel locations. For these drawings to be displayed, the programme must translate from the grid of the drawing to the grid of the screen. As a result, the programme operates more slowly. However, the drawings can be edited far more easily, because the objects in the drawing can be manipulated as objects, may be of almost unlimited size (regardless of how much of the total will fit on the monitor screen at one time). and may be scaled when shown on screen or paper. Images from these programmes are said to be *vector-based.*

Raster images are sums of pixels representing graphics. They have a data item for each screen location, so they give information wherever one clicks on the screen. They are the most common forms of digital computerised images. They can be produced relatively easily and quickly (scanning processes), and the degree of human error in raster digitising processed (scanning) is much smaller as compared to vector digitising processes (cursor using). Raster images are resolution-dependant, they produce large files, and they have no real-world dimensions, since they are just a record of accumulated screen locations. Vector images are outcomes of mathematical formulae. They are stored as geometrical entities (lines, arcs, circles, and the like), together with their positions in the users' grid system. Dimensions are always implicit in vector data. They can be enlarged almost to any size, since they are resolution-independent. They produce much smaller files. On the other hand, they need much more time and effort to produce.

Other issues related to mapping of certain parts of the world (including areas in Greece) are the availability and political significance of maps. Maps of the Ioannina nomos are not widely and easily available, and finding the appropriate maps to digitise was not a straightforward process. This is mainly for political rather than other reasons. The Ioannina nomos lies on the modern Greek - Albanian border, so only certain areas are available in relatively detailed scale. Although the area has been extensively mapped in scales as large as 1:5000 by the Γεωγραφική Υπηρεσία Στρατού (the Hellenic Army Geographical Service, or HAGS)[44], maps of the Ioannina nomos as a whole are published for commercial use only in scales of 1: 250000 and/or smaller. Most of bigger

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[44] http://www.gys.gr/english/EN1.htm, last visited 20/09/2004.

scale map sheets covering the Ioannina nomos are classified ('Εμπιστευτικόν')[45] and available only to Greek governmental institutions, such as the Ephorates of Antiquities. Greek State Institutes (e.g. the Institute of Geology & Mineral Exploration[46]). town planning departments of the Greek administration system, and Greek Universities. for special purposes and after a long bureaucratic process with extensive paper work. Acquiring paper maps has therefore been a project in its own right, even before digitising them. The whole process (acquiring and digitising), including specific logistics, limitations and outputs is discussed in chapter 4.3.3 below.

Another issue on mapping relates to cartographic projections. The most common projections used in Greek maps are (a) the HATT and (b) the HGRS87.

(a) *The HATT projection (Equidistant Azimuthal HATT projection)*. This uses a plane surface, meaning that it can be attached to cartesian coordinates. This plane surface is tangental to a point on the ellipsoid called the *Map Sheet Centre* (MSC). 130 of the 189 trapezoidal plane sheets available (each 30' x 30' in size) are required to cover Greece. On every sheet a different cartesian coordinate system is defined, with the point of origin located at the point of tangency (MSC). In cases where more than one sheet is needed to cover a specific geographical area, all coordinates must be converted to refer to the same map sheet, a process known as *Map Sheet Change*. This projection system is mainly used by the Γεωγραφική Υπηρεσία Στρατού (the Hellenic Army Geographical Service) for the 1:100000, 1:50000 and 1:5000 series which cover all of Greece. As it is not in use nowadays, it tends to be replaced by the HGRS87 system.

(b) *The HGRS87 projection (Hellenic Geodetic Reference System 87)*: Also referred to as EGSA87, from its Greek acronym ΕΓΣΑ87 (Ελληνικό Γεωδαιτικό Σύστημα Αναφοράς 87), HGRS87 is the most recent projection system used for geodetic, topographic and cartographic purposes in Greece. It tends to replace old projection systems, as it uses a single zone and therefore provides unified georeferencing throughout Greece.

For more details of the above projection systems as well as other projection systems used in Greek maps, such as the '3 degrees Transverse Mercator projection' (TM3°) and the 'UTM projection system', see Koutsopoulos 2002. For online summaries, visit the websites of Anavasi[47] and Geopikonisis Ltd[48]. For coordinate systems and map projections in general, see Maling 1992.

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[45] http://www.gys.gr/greek/GR3_3_7.htm, last visited 20/09/2004.
[46] http://www.igme.gr, last visited 20/09/2004.
[47] http://www.mountains.gr/xartografiko/xartographia.html, last visited 20/09/2004.
[48] http://www.geoapikonisis.gr/projections-greek.htm, last visited 20/09/2004.

4.3.3 Creation of the Digital Base Map and the GIS for the Ioannina Nomos

Acquiring analogue map sheets and creating the digital map of the Ioannina nomos has been a project in its own right, involving a number of steps and decision making processes.

The first step involved deciding the scale and map attributes to be digitised, taking into account availability, archaeological usability, copyright issues, and time constraints.

4.3.3.1 Availability of Maps of the Ioannina Nomos

Maps covering the Ioannina nomos were available from the sources below.

- The World Tactical Pilotage Chart, scale: 1:500000. F-3D sheet. The Ioannina nomos is covered as a whole by 1 sheet (F-3D).
- The Γεωγραφική Υπηρεσία Στρατού (the Hellenic Army Geographical Service or HAGS) maps, scale 1: 250000, HATT projection (see chapter 4.3.2). The Ioannina nomos is covered by 2 adjoining sheets: Ioannina and Larisa[49].
- Road editions maps, scale 1:250000, HATT projection (see chapter 4.3.2). Ioannina nomos is covered as a whole by 1 sheet (*Epiros / Thessaly*).
- The publication *Étude géologique de l' Épire (*IGRS & IFP 1966), scale 1:100000, HATT projection. This is a publication in collaboration with a Greek State institute, the Institute of Geology & Mineral Exploration. The Ioannina nomos is covered as a whole. The map is bonded at the end of the publication: for a brief description, see IGRS & IFP 1966: 3-4.
- HAGS maps, scale 1: 100000, HATT projection. The Ioannina nomos is covered by 9 adjoining sheets: Argyrokastron, Delvinakion, Parga, Korytsa, Konitsa, Ioannina, Grevena, Arta, Metsovion and Petas[50]. Only the last 3 are available to the public; the first 6 are classified ('Εμπιστευτικόν').
- HAGS maps, scale 1: 50000, HATT projection. The Ioannina nomos is covered by 18 adjoining sheets, created in the 1970s: Borova, Gramos, Pogoniani, Vasilikon, Konitsa, Pentalofos, Delvinakion, Doliana, Tsepelovon, Metsovon, Panagia, Filiatai, Klimatia, Ioannina, Pramanta, Paramythia, Pappadatai, and Agnanta[51]. Only Panagia, Metsovon, Pramanta, Paramythia, Pappadatai, and Agnanta are available to

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[49] http://www.gys.gr/greek/GR3_3_9.htm, last visited 20/09/2004.
[50] http://www.gys.gr/greek/GR3_3_8.htm, last visited 20/09/2004.
[51] http://www.gys.gr/greek/GR3_3_7.htm, last visited 20/09/2004.

the public; the other 12 are classified ('Εμπιστευτικόν'). Each sheet covers a latitude of 15 minutes and a longitude of 15 minutes (see also pl. 50).

- Russian Military Topographic Directorate of the General Staff map, scale 1:50000, Gauss-Kruger projection[52]. The Ioannina nomos is covered by 25 adjoining sheets in a very similar way to the 1:50000 maps of the Hellenic Army Geographical Service: these too were created in the 1970s. Each sheet covers a latitude of 15 minutes and a longitude of 10 minutes (see also pl. 51). Map sheets providing full coverage of Greece are available on the World Wide Web[53].

  HAGS also offer larger scale maps (1:25000, 1:10000, and 1:5000), although here too, the vast majority of sheets covering the Ioannina nomos are classified.

There are also maps covering certain areas of the Ioannina nomos, such as the Anavasi *Pindus / Zagori* 1:50000 map (ISBN: 960-8195-23-3, published in November 2002, based on the HGRS87 map datum) and Road Editions *Southern Pindos, Mt. Tzoumerka, Mt. Lakmos*, 1:50000 map (ISBN: 960-8189-00-4, published in 2000, based on the ED1950 map datum). Unlike the HAGS maps, Anavasi and Road Editions maps are GPS compatible.

4.3.3.2 Choosing a Map for Digitisation: Scale, Map Attributes, Archaeological Usability and Copyright

Since different maps are expected to have different degrees of distortion (see chapter 4.3.2 above), it was important to obtain analogue maps from one source, rather than putting together map sheets from different sources. Also, since my research refers to the Late Prehistory of the Ioannina nomos, the overall digital map of the Ioannina nomos would serve as the plotting base for all sites and findspots with Late Prehistoric evidence presented in part 3.

In terms of scale, the 12th Ephorate of Prehistoric and Classical Antiquities and the 8th Ephorate of Byzantine Antiquities use HAGS maps, either 1:50000 for general topographical plotting or 1:5000 for more specific topographical needs. Converting 1:50000 maps to digital form to be used for GIS would be a very useful investment for archaeological work in the Ioannina nomos, but dealing with 1:5000 map sheets for the 4,990 km^2 would be virtually impossible for this particular research for two main reasons. The first is that 1:5000 map sheets are produced, available and copyrighted

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[52] http://www.safe.com/support online_**help/coord**sys/projection_types.htm, last visited 20/09/2004 (click on Gauss Kruger Projection, aka Gauss).

[53] http://www.cartographic.com/xq/ASP/AreaID.3/RegionID.111/CategoryID.5/ProductID.6/europe/greece/qx/topographic_maps.asp, last visited 20/09/2004.

only by HAGS. Archaeologists working in the unclassified areas of Greece digitise 1:5000 maps, but permission for digitisation for the Ioannina nomos classified parts, which form the largest part of the nomos (see ch. 4.3.3.1) would never be granted. The second relates to practical constraints: it was too big a job to fit within the limits (especially the time limits) of this research. Therefore, I decided to work towards digitising 1:50000 map sheets. The obvious choice was the Russian Military Topographic Directorate of the General Staff sheets (pl. 51), although in the process of digitisation and checking described below (chapter 4.3.3.3), I have used the HAGS 1:50000 sheets and the Anavasi *Epirus / Zagori* 1:5000 map in various ways.

In terms of map attributes, I decided to digitise the contour of the Ioannina nomos (polyline), the elevation contours (polylines), rivers and streams (lines). These three attributes are those which have not significantly changed since the creation of the 1:50000 sheets in the 1970s. The outcomes are provided as vector data in the CD-ROM at the end of this thesis (for file names and file contents see chapter 4.3.3.3 below).

Finally, I reiterate an essential point made in the Preface: once HAGS maps and topographical data are used, copyright involves HAGS, especially due to the current political realities mentioned in chapter 4.3.2. Permission to use any digital map in this thesis, as well as the GIS, must be obtained both from the author of this thesis and from HAGS by anyone seeking to do further work.

4.3.3.3 Digitising the Analogue Maps: Processes, Testing, Outcomes

Parts or the whole of 24 1:50000 sheets of the Russian Military Topographic Directorate of the General Staff map had to be digitised in terms of overall contour, contour elevation contours (100m. intervals), and rivers / water streams.

Two methods of digitisation were employed: (a) manual, and (b) on-screen digitising. The theory of these methods is briefly described by Jones (1997: 82-90). I tried both methods for one sheet to check accuracy levels.

(a) *Manual digitisation.* All manual digitisation used the same software and hardware. In terms of hardware, I used an A1 digitizing tablet. (Accugrid Opaque Digitizing tablet, model: A60, made by the Numonics Corporation, see Appendix III for specifications), and a four-button cursor (accuracy circa 0.254 mm.). The software was AutoCAD 13. 15 grid reference points were taken to ensure that referencing information would be retained in the digital version. Digitisation was in exercised streaming mode on the smallest distance basis (20m. real distance or 0.4mm on the map). Error detection processes involved continuous visual feedback while digitising (using a 21-inch

computer monitor), as well as check plots. Digitised data were plotted at the source scale on a transparent film, which was then overlaid on the original analogue map sheet (methods suggested by Jones 1997: 86-87). Manual digitisation proved a very long and tiring process, resulting in errors and frustration, especially when re-digitisation was required.

(b) *on-screen digitising*. Having scanned all map sheets, on-screen digitising was accomplished by means of the geo-referencing tool in ArcGIS 8.3. As grid reference points used the corners of every map sheet, as well as the triangulation points within the sheets (mainly HAGS set triangulation points), the coordinates / position of which were known with an estimated position error of 1m., all points and lines were converted to the HGRS87 projection (Hellenic Geodetic Reference System 87) by means of the GoordsGr programme designed by Yiannis Syggros[54]. The digitisation / vectorisation elevation contours, rivers and water streams was achieved by the digitisation tool in ArcGIS 8.3 in streaming mode on the distance basis of 20-60m. real distance or 0.4 – 1.2 mm. on the map). To apply all these modifications, the raster image was placed in the background of the digital map. For error detection, I used the HAGS 1:50000 sheets and the Anavasi *Epirus / Zagori* 1:5000 map. The error noted was on average ca.5m. This method was preferred to manual digitisation on grounds of efficiency. The final step was to perform a projection transformation to both WGS84 (GPS map datum, see chapter 3.2.3.2A), so that data may be available both in the HGRS87 and the WGS84 GPS-oriented projections.

A Digital Elevation Model (DEM) was produced using the topogrid tool in ArcInfo. Cell size was 50m. According to this DEM, a hillshade map was produced.

All outcomes are in the CD-ROM in Appendix IV.

4.3.3.4 GIS implementation

Once the base map was prepared, a GIS project was implemented in ArcView GIS 3.2 and TopoView 2. Two sets of four themes were imported. One set consists of entities projected in HGRS87: the contour of the Ioannina nomos (polyline), elevation contours (polylines), river / water streams (lines) and Late Prehistoric locations (points). The other set has the same entities in the WGS84 GPS-oriented projection. Both sets are also accompanied by a .dbf database (ioan_f.dbf) containing information on the Late Prehistoric sites of the Ioannina nomos from the Gazetteer in part III. The .dbf file has

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[54] I am grateful to Anavasi editions and the programme designer (Mr Yiannis Syggros) for their help and guidance towards accomplishing this projection system converting task.

been created from the ioannina.mdb database through Microsoft Excel, and can be linked to the point datasets using the 'join tables' command in ArcView GIS 3.2.

The project is available in Appendix IV on the CD-ROM as an ArcView GIS 3.2 file. Map 1 is an A0 printout (0. 83 X 1.15 m.) of this project, abiding by HAGS copyright constraints. Relevant metadata are presented in Appendix VI, as well as in the relevant .doc file on the CD-ROM (metadata.doc).

PART 5

SUMMARY - CONCLUSIONS

As a review and analysis of Late Prehistoric pottery typologies, the Late Prehistoric archaeological record, and the topographical archaeology of the Ioannina nomos, this thesis offers a summary, a research and teaching tool, and a point of departure for further research. This is the first occasion on which the Ioannina nomos has been approached as an entity in its own right, rather than as part of a wider geographical perspective/concept such as northwestern Greece (Wardle 1972) or Epirus (Soueref 1986; Soueref 2001). This undertaking gains extra significance when one considers the rhythm of development and landscape-oriented changes (expansion of cities and major road construction works, such as the Egnatia Motorway), new developments in the administration of the Ioannina nomos (the Kapodistrias plan and the New Archaeological Law), and ongoing archaeological research within the nomos (as e.g. at Dodoni [site # 43] and Meropi [site # 13]) and around its periphery (the Nikopolis Project, Wiseman & Zachos 2003).

The archaeological record and the topographical archaeology of the Ioannina nomos in Late Prehistory have been approached in both traditional and new ways. Traditional ways included a review of all previous pottery classification schemes, both those long established, as the Kastritsa scheme (chapter 2.2.2) and new, such as the Krya and Liatovouni schemes (chapters 2.2.3, 2.2.4 and 2.2.5). It is hoped that the proposed combined scheme, with its Epirus 1a-c, 2, 3, and 4 classes (chapters 2.3 and 2.4), builds on the strengths of past typologies and will provide a sound base for future projects in the Ioannina nomos and possibly in northwestern Greece. Pottery quantification methods may provide further insights: in the case of the Liatovouni pottery record, it was shown that from a 16-class pottery scheme (chapter 2.2.5.2), 3 classes dominate the archaeological record (2b, 1b and 3a), while others are almost non-existent (Liatovouni 4 and 5b). Proportions in terms of diagnostic and non-diagnostic sherds may be used as indicators of economic and cultural realities, while brokenness, AWS and averages may be of use in comparative studies once other assemblages as similarly quantified.

In terms of topographic archaeology, an up-to-date Gazetteer of sites and findspots with Late Prehistoric evidence now includes Late Prehistoric evidence from 62 locations, all very close to water sources and most (19) from the area around the lake of Ioannina. Global positioning readings were taken to secure accurate and precise plotting. Most of the locations have been classified as findspots, and very few can securely be characterised as settlements (Liatovouni, Krya, Meropi, and Dodoni, site numbers # 6, 13, 31 and 43 respectively). Needless to say, much remains to be done in

the study of the Late Prehistory of both the Ioannina nomos and northwestern Greece as a whole. It will be obvious to the reader that lack of a well defined chronology severely limits the information that can be extracted from surface scatters and excavated sites in Late Prehistory. Real progress depends on the identification, excavation, and publication of well-stratified sites with deposits spanning Late Prehistory. It is hoped that this Gazetteer will serve as a point of overall reference and information retrieval.

Apart from applying quantification methods to the pottery record and acquiring positioning data by means of GPS, new approaches involved the creation and implementation of digital applications. The Gazetteer has been designed and offered in the form of a Microsoft access database as well as in a website format; it is available online, hosted temporarily by the Hellenic Society for Near Eastern Studies (http://www.hsnes.com/Niweb/Web3/indexNI.html). It is hoped that this website will serve as a dynamic database and a tool for teaching and research. Another application is the creation of a digital 1:50000 map for GIS applications, based upon an analogue map. Elevation isoline (100m. contour interval) and rivers / water streams have been digitised and successfully plotted in a GIS application, together with the global positioning reading of all Late Prehistoric locations in the Ioannina nomos. Topographical and archaeological information from the Gazetteer is also available in a GIS-friendly format. Thus, a major research tool has been offered. It is hoped that researchers with topographical interest in the Ioannina nomos will exploit this digital GIS-applicable base map.

This synthesis is of a dynamic rather than static character. Further archaeological investigation, research, and publication will demand revisions of many observations, and certainly of most of my catalogues, maps, and tables. But while this has always been in the nature of archaeological investigation, it is also a good reason to prefer a digital application format, with its advantages of exploitability, expandability, and ease of revision, correction, and update.

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AND

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presented in the order of appearance in the thesis (by chapter)

Preface

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Chapter 1.1

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Chapter 1.5.1

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Chapter 1.6.1

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Chapter 1.6.3

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Chapter 3.2.3.2A

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Chapter 4.1

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Chapter 4.2

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Chapter 4.2.3

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Chapter 4.2.5

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Chapter 4.2.5.1

http://www.hsnes.com/NIweb/Web3/indexNI.html: Homepage of the website created from this thesis research, a digital Gazetteer of the archaeological sites of the Ioannina nomos, Epirus, Greece, in Late Prehistory (coded LPIN) (last visited 20/09/2004).

Chapter 4.2.5.2

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Chapter 4.2.5.3

http://www.hsnes.com/NIweb/Web3/Gribiani.html: The site of Griniani webpage of the website created from this thesis research, a digital Gazetteer of the archaeological sites of the Ioannina nomos, Epirus, Greece, in Late Prehistory (coded LPIN) (last visited 20/09/2004).

Chapter 4.2.5.4

http://www.hsnes.com/NIweb/Web3/Mesogephyra_plates.html: Plates of finds from Mesoephyra: webpage of the website created from this thesis research, a digital Gazetteer of the archaeological sites of the Ioannina nomos, Epirus, Greece, in Late Prehistory (coded LPIN) (last visited 20/09/2004).

Chapter 4.2.5.5

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Chapter 4.3.1

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Chapter 4.3.2

http://www.oreivatein.com/page/coop/road_editions/e_roaded.htm: Website of the Road Editions (last visited 20/09/2004).

http://www.gys.gr/english/EN1.htm: Website of the Hellenic Military Geographical Service (last visited 20/09/2004).

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http://www.igme.gr: Website of the Greek Institute of Geology & Mineral Exploration (last visited 20/09/2004).

http://www.mountains.gr/xartografiko/xartographia.html: Webpage of the website of the Anavasi editions, offering a summary of cartography in Greece (last visited 20/09/2004).

http://www.geoapikonisis.gr/projections-eng.htm: Webpage of the Geoapikonisis Ltd., presenting the most common cartographic projections used in Greek maps (last visited 20/09/2004).

Chapter 4.3.3.1

http://www.gys.gr/greek/GR3_3_9.htm: Webpage of the Hellenic Military Geographical Service website, showing availability of map sheets covering Greece (scale 1:250000) (last visited 20/09/2004).

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http://www.gys.gr/greek/GR3_3_7.htm: See Chapter 4.3.2 above.

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http://www.cartographic.com/xq/ASP/AreaID.3/RegionID.111/CategoryID.5/ProductID.6/europe/greece/qx/topographic_maps.asp: Webpage of the East View Cartographic, presenting 1:50000 map sheets of Greece, produced by the Russian Military Topographic Directorate of the General Staff (last visited 20/09/2004).

Conclusions

http://www.hsnes.com/Niweb/Web3/indexNI.html: See chapter 4.2.

Appendices and Plates

http://www.garmin.com/products/gpsIII/spec.html: Webpage of the GARMIN Ltd. Website, presenting the specifications of the GARMIN GPS III unit (last visited 20/09/2004).

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Maps:

Anavasi, *Pindus / Zagori*, 1:50000 map (ISBN: 960-8195-23-3, published in November 2002, based on the HGRS87 map datum).

Hellenic Army Geographical Service (Γεωγραφική Υπηρεσία Στρατού), *Ioannina*, 1:250000 scale, HATT projection.

Hellenic Army Geographical Service (Γεωγραφική Υπηρεσία Στρατού), scale 1: 50000, HATT projection. Map sheets for the full coverage the Ioannina nomos, namely *Borova, Gramos, Pogoniani, Vasilikon, Konitsa, Pentalofos, Delvinakion, Doliana, Tsepelovon, Metsovon, Panagia, Filiatai, Klimatia, Ioannina, Pramanta, Paramythia, Pappadatai, and Agnanta*.

Road editions, *Epiros / Thessaly*, 1:250000 map, HATT projection (ISBN: 960-8481-17-1).

Road Editions, *Southern Pindos, Mt. Tzoumerka, Mt. Lakmos*, 1:50000 map (ISBN: 960-8189-00-4, published in 2000, based on the ED1950 map datum).

Russian Military Topographic Directorate of the General Staff, scale 1:50000, Gauss-Kruger projection (sheets covering the Ioannina nomos).

World Tactical Pilotage Chart, scale: 1:500000, F-3D sheet.

Varia:

Greek Government Gazette, issue number 146, 13/06/2003: The issue of the Greek Government Gazette introducing the New Archaeological Law, and the new format of the archaeology-oriented administration system in Greece from the date of issue onwards.

APPENDICES

APPENDIX I

GARMIN GPS III: Specifications

Plotter/Moving Map Features

Basemap: Built-in Americas Land or International Land to 20 miles (includes lakes, rivers, railroads, coastlines, interstates, national and state highways)

Map Scale: Screen-width scale (500 feet to 3,000 miles)

Navigation Features

Waypoints:

- Total: 500 each with name, symbol, and map display option
- Nearest: 9 (automatic) continuously updated

Routes: 20 reversible routes with up to 30 waypoints each, plus MOB and TracBack® modes

Track Log: Over 2,000 points

Map Datums: 106

Coordinates: Lat/Lon, UTM/UPS, plus 7 grids, including Maidenhead User Grid

Performance

Receiver: Differential-ready 12 parallel channel receiver tracks and uses up to twelve satellites to compute and update a position

Acquisition Times:

- Warm: approx. 15 seconds
- Cold: approx. 45 seconds
- Autolocate™: approx. 5 minutes
- EZinit™: easy initialization, 45 seconds

Update Rate: 1 second, continuous

Accuracy:
- Position: 15 meters (49 feet) RMS*
  1-5 meters (3-15 feet) RMS with
  Garmin® GBR 21 DGPS receiver (optional)
- Velocity: 0.1 knot RMS steady state

Dynamics: 6g's

Interfaces: NMEA 183 and RS-232 DGPS corrections

Antenna: Detachable with standard BNC connector

Physical
Size: 2.32 H x 5 L x 1.62 W inches (5.89 x 12.7 x 4.11 cm)

Weight: 9 ounces (255g) w/ batteries

Display: 2.2 W x 1.5 H inches (5.6 x 3.8 cm) high-contrast electroluminescent backlit FTN display; switchable orientation (100 x 160 pixels with gray scale)

Power
Memory: Internal lithium battery lasts up to 10 years

Power Source: 10-32 VDC (4 AA batteries)

Usage: 0.75 watts

From: http://www.garmin.com/products/gpsIII/spec.html, last visited 20/09/2004.

APPENDIX II

Guide for Converting Lat/Lon Coordinates

Fractions of degrees are broken down into minutes and seconds. Each minute represents 1/60th of a degree and each second represents 1/60th of a minute (or 1/3600th of a degree). Below are the steps of converting from an angle in degrees-minutes-seconds to decimal degrees and back to degrees-minutes-seconds.

D = Degrees .d = Decimal Degrees M = Minutes .m = Decimal Minutes S = seconds .s = Decimal Seconds	Examples: DM.m = Degrees, Minutes, Decimal Minutes 45o 22.6333” D.d = Degrees, Decimal Degrees 45.3772o DMS = Degrees, Minutes, Seconds 45o 22” 38`

Convert From➔To	**D**	**M**	**S**	**D**	**M**	**S**	**Operation**
DMS➔DM.m	45	22	38 ➔	45	22.633		Divide S by 60 to get .m (38/60=.6333) Add .m to M to get M.m (22+.6333=22.6333)
DM.m➔D.d	45	22.6333	➔	45.3772			Divide M.m by 60 to get .d (22.6333/60=.3772) Add .d to D to get D.d (45+.3772=45.3772)
D.d➔DM.m	45.3772		➔	45	22.6333		Multiply .d by 60 to get M.m (.3772*60=22.6333)
DM.m➔DMS	45	22.6333	➔	45	22	38	Multiply .m by 60 to get S (.6333*60=38)

Notes specific to lat/lon coordinates and Satloc:

1) For manual entry of coordinates into the airplane`s Satloc equipment, make sure the input coordinates are in DM.m format.

2) To create a file for uploading to Satloc, the coordinates need to be in D.d format Make sure the longitude is preceded by a minus sign.

APPENDIX III

Accugrid Opaque Digitizing tablets: Specifications

(for this research, model A60 was used)

AccuGrid
NUMONICS
DIGITIZING TABLET

Numonics Corporation
101 Commerce Drive • PO Box 1005
Montgomeryville, PA 18936 • USA
Tel: 215-362-2766 • Toll Free: 800 523-6716
Fax: 215-361-0167
Email: numonics@numonics.com
URL: www.numonics.com

The digitizing tablet you can depend on for all G.I.S. projects.
AccuGrid is a breakthrough concept in CAD, perfect for mapping, forestry, geological exploration, environmental monitoring, telecommunications, suitability studies and land use planning. Using electromagnetic technology, AccuGrid delivers accuracy, flexibility, and high performance that take advantage of recent advances in CAD software.

AccuGrid includes all major emulations.
It's the most sophisticated advancement in digitizing tablet technology, incorporating all major emulations: Numonics, Calcomp, Summagraphics and GTCO.

Easy to set up. Easy to use. Easy to Like!
AccuGrid's streamlined contemporary design makes everything look simple. And it is! Tablet set-up is done with a user-friendly menu – there are no dip switches to set and reset. On-tablet soft keys make switching between user-defined configurations as easy as one key press. And you have your choice of transducers – dual-switch pen stylus, 4-button cursor or 16-button cursors. It's fast. Efficient. Accurate. Designed to work the way you do.

The high performance tablet with the low profile.
AccuGrid's thin profile contains a wide range of impressive features including:

- An easy, user-friendly set-up menu
- On-tablet soft keys for easy configuration switching
- Resolution 1000 lpi
- Can be used in tandem with AutoCAD ADI® Real/Protected Mode Driver, compatible with AutoCAD Release 12.
- Driver for Win 9X/Me/NT/2000 Operating Systems and multipointing mode, allowing mouse/cursor and tablet to work together

We're there for you.
Numonics is more than a manufacturer of digitizers. We solve unique input device and imaging problems for OEM's and systems integrators. So think of us as your technology partner. And count on us to assist you in the development of cost-effective and creative solutions that make integration easier.

A Limited Lifetime Warranty.
The AccuGrid digitizer carries a limited lifetime warranty against manufacturing defects. The accessories shipped with the AccuGrid, such as the pen stylus and the 4- and 16-button cursors, are under warranty for two year from the date of purchase.

It's everything you need for ease of operation – and dependable results!
AccuGrid streamlines your workload so you increase your productivity. It's available in opaque and backlighted models, so you can work with slides and overlays.

Resolution: 1000 lpi
Accuracy: ± 0.010" (0.254mm) or ± 0.005" (0.127mm)
Interface: RS-232 25 pin D type female
Operating Temperature: 50 to 104°F (10 to 40°C)
Storage Temperature: 14 to 131°F (-10 to 55°C)
Humidity: 90% (non-condensing)

Accessories:

Standard: Universal power supply – 110-240 VAC
Optional: Dual-switch pen stylus
4-button cursor
16-button cursor
Mechanical stand
Power stand
Menu Selectable Emulations:
Numonics
Calcomp
Summagraphics
GTCO
Safety Approvals:
UL 1950
CAN/CSA C22.2 No. 950
EN 60950
† 220V not available
* CE Mark not available

AccuGrid Opaque Digitizing Tablet Specifications
Physical Data ("H" Designates High Accuracy ± 0.005")

Model	Active Area	Dimensions	Weight
A56/A56H	20" x 24" 50cm x 60cm	26-1/4" x 30-1/8" x 1.17" 66.7cm x 76.5cm x 3cm	17 lbs. 7.7 kg
A60/A60H	24" x 36" 60cm x 90cm	30-1/8" x 42" x 1.17" 76.5cm x 106.7cm x 3cm	26 lbs. 11.8 kg
A90/A90H	36" x 48" 90cm x 120 cm	42" x 53-7/8" x 1.17" 106.7cm x 136.8cm x 3cm	43 lbs. 19.5 kg
A110/A110H	44" x 60" 110cm x 150cm	49-1/8" x 66-7/8" x 1.17" 124.8cm x 169.9cm x 3cm	62 lbs. 28.1 kg

AccuGrid Backlighted Digitizing Tablet Specifications
Physical Data

Model	Active Area	Dimensions	Weight
A43BL	12" x 17" 30cm x 43cm	17-1/8" x 21-7/8" x 1.17" 43.5cm x 55.6cm x 3cm	18 lbs. 8.2 kg
A56BL/ A56HBL	20" x 24" 50cm x 60cm	26-1/4" x 30-1/8" x 1.17" 66.7cm x 76.5cm x 3cm	36 lbs. 16.3 kg
*A60BL/ *A60HBL	24" x 36" 60cm x 90cm	30-1/8" x 42" x 1.17" 76.5cm x 106.7cm x 3cm	73 lbs. 33.1 kg
*†A90BL/ *†A90HBL	36" x 48" 90cm x 120cm	42" x 53-7/8" x 1.17" 106.7cm x 136.8cm x 3cm	114 lbs. 51.8 kg

From: http://www.numonics.com/cad/AccuGridGarment.pdf, last visited 20/09/2004.

APPENDIX IV

Contents of the CD-ROM at the end of the thesis

The CD-ROM in the pocket at the end of the thesis has two folders: the 'LPIN website' folder, the 'gisdata' folder, and the file ioannina.mdb (Microsoft Access database).

The 'LPIN website' folder contains all files used for the creation of the website of this thesis (see chapter 4.2). Files can be view by web surfing programmes, such as the Microsoft Internet Explorer and the Microsoft FrontPage. Since html files were created in Microsoft FrontPage, this programme is recommended for their viewing.

The 'gisdata' folder contains data that can be input to a GIS application. The end -84 implies WGS84 map datum as opposed to HGRS87 (see chapter 4.3.2). The file ioan_f.dbf contains information from the Gazetteer in part 3, and can be linked to the points dataset. For the files in the 'gisdata' folder, see also Appendix VI as well as the file 'metadata.doc'.

The file 'map.ppt' is also included in this folder; it is the file that produced the map 1 of this thesis.

APPENDIX V

Index of sites / findspots names and site numbers

Name of the archaeological position	Site number
Agioi Anargyroi	25
Amphithea	27
Anthochori	44
Aristi Zagoriou	18
Artsista	18
Ayioi Anargyroi	25
Ayioi Apostoloi	37
Bisti Cave	39
Despotiko Ioanninon	58
Dhespotikon	58
Dhistraton	1
Distrato	1
Dodona	43
Dodone	43
Dodoni	43
Dourouti Panepistimioupoles Ioanninon	26
Drabatova	27
Dravatova	27
Elaphotopos	19
Gardiki	36
Georgani	49
Georyianni	49
Goritsa	3
Goritsa hill	39
Greveniti	20

Gribiani	59
Iliorachi	2
Iliorrachi	2
Ioannina Island	28
Kakousioi	21
Kalbaki	22
Kallithea	3
Kalpaki	22
Kalyvia Elaphotopou	19
Kastritsa	29
Katamachi Ioanninon	50
Kato Lapsista	30
Kato Meropi Pogoniou	13
Kato Pedina Zagoriou	23
Kato Soudenoi Zagoriou	23
Kephalovryso Pogoniou	10
Kleidonia	4
Konitsa School of Agriculture	5
Kopani	51
Koukousos	21
Koutselio	32
Koutsoulio	32
Koutsoulion	32
Krya Ioanninon	31
Ktismata Pogoniou	11
Lachanokastro	12
Lapsistis	30
Liatovouni	6
Lykotrichi	33
Mazaraki	60

Megali Goritsa	3
Meropi Pogoniou	13
Mesogephyra	7
Mesoyefira	7
Metsovo	45
Mpisti Cave	39
Neochoropoulo	34
Neochoropoulos	34
Neokaisareia	35
Palaiogoritsa	8
Palia Goritsa	8
Paliopyrgos	13
Panayia Pogonianis	14
Passaron	36
Passarona	36
Pedini	37
Perama Ioanninon	38
Pesta Sklivanis	52
Peston-Sklivanis	52
Pramanta	46
Rhodotopi	39
Rodotopi	39
Romano	53
Seistrounio	57
Sentenikos	40
Sistrounio	57
Stavraki	41
Stavrodromi	15
Stayraki	41
Stayrodromi Pogoniou	15

Βερενίκη	61
Βήσσανη	16
Βοστίνα	14
Βωβούσα Ιωαννίνων	48
Γαρδίκι	36
Γεωργάνοι	49
Γεωργική Σχολή Κόνιτσας	5
Γκρίμπιανη	59
Γορίτσα	3
Γρεβενίτι	20
Γρίβιανη	59
Γρίμπιανη	59
Δερβεντίστα	44
Δεσποτικό Ιωαννίνων	58
Δίστρατο	1
Δουρούτη Πανεπιστημιούπολης Ιωαννίνων	26
Δυτικά Πρανή κοιλάδας Αώου-Βοϊδομάτη	9
Δωδώνη	43
Ελαφότοπος	19
Ζάλογκο	62
Ζεραβίνα	17
Ηλιοράχη	2
Ηλιορράχη	2
Θεριακήσιο	55
θέση Αγία Τριάδα	2
θέση Μπίχλη	2
Κακουσιοί	21
Καλλιθέα	3
Καλμπάκι	22
Καλπάκι	22

Καλύβια Ελαφότοπου	19
Καστρίτσα	29
Καταμάχη Ιωαννίνων	50
Κάτω Λαψίστα	30
Κάτω Μερόπη	13
Κάτω Πεδινά Ζαγορίου	23
Κάτω Σουδενοί Ζαγορίου	23
Κάτω Σουδενά	23
Κεφαλόβρυσο	10
Κλειδωνιά	4
Κόνιτσα	5
Κοπάνη	51
Κουκουσός	21
Κουτσελιό	32
Κουτσουλιό	32
Κρύα Ιωαννίνων	31
Κρυονέρι	27
Κτίσματα	11
Λαχανόκαστρο	12
Λιατοβούνι	6
Λοφίσκος	42
Λόφος Γορίτσα	39
Λυκοτρίχι	33
Μαζαράκι	60
Μέβγεζα	13
Μεγάλη Γορίτσα	3
Μεγάλη Γορίτσα	38
Μεγάλο Γαρδίκι	36
Μερόπη	13
Μεσογέφυρα	7

Μετζητιέ Πωγωνίου	10
Μέτσοβο	45
Ναός Αρείου Διός	39
Νεοκαισάρεια	35
Νεοχωρόπουλο	34
Νησί Ιωαννίνων	28
Νραμπάτοβα	27
Ντρεστενίκο	24
Παλαιογορίτσα	8
Παλαιόπυργος	13
Παλιόπυργος	13
Παναγιά Πωγωνιανής	14
Πασσαρών	36
Πασσαρώνα	36
Πέραμα Ιωαννίνων	38
Πεστά Σκλίβανης	52
Πεστών Σκλίβανης	52
Πηγή Νέλες Κλειδωνιάς	4
Πράμαντα	46
Ραψίστα	37
Ροδοτόπι	39
Ρουμπάτες	13
Ρωμανό	53
Σεντενικός	40
Σιστρούνιο	57
Σπήλαιο Μπιστή	39
Σταυράκι	41
Σταυροδρόμι	15
Στρούνι	27
Στρούνιο	57

Τέροβο	54
Τοσκέση- Αχλαδέα	56
Τρίστενο Ιωαννίνων	24
Τσεραβίνα	17
Τσερβάριο	19
Τσέργιανη	42
Φραστανά	13
Ωραιόκαστρο	12

APPENDIX VI

GIS Metadata and Documentation

Metadata to the spatial datasets of this thesis are in line with the Arts and Humanities Data Service standards on the format, preservation and accessibility of digital data. The relevant Guidelines and discussion can be accessed via http://ads.ahds.ac.uk/ (especially their GIS *Guides to Good Practice* and the Dublin Core Metadata standards[1]).

This Appendix is also given as a word file (metadata.doc) in the CD-ROM in the pocket at the end of this thesis (see also Appendix IV).

The fifteen elements of the Dublin Core are documented in brackets as in http://ads.ahds.ac.uk/project/goodguides/gis/sect54.html:

Title [The name given to this resource by its creator. The name need not necessarily be unique]

The Ioannina nomos, Northwestern Greece, digital map (scale 1:50000).

The Late Prehistoric sites of the Ioannina nomos, Northwestern Greece.

Gazetteer of Late Prehistoric sites of the Ioannina nomos, Northwestern Greece, in an Access database.

Creator [Those persons or organisations responsible for creation of the resource being described, its source or surrogates, whose involvement is considered worthy of inclusion for the purpose of discovering said resource]

Georgios Papaioannou

Subject [That which the resource is about, preferably using terms drawn from a controlled vocabulary such as the *Thesaurus of Monument Types*.]

Digitising paper maps (scale 1:50000) of the Ioannina nomos, Northwestern Greece.

Plotting the Late Prehistoric site locations (GPS) of the Ioannina nomos, Northwestern Greece.

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[1] http://ads.ahds.ac.uk/project/goodguides/gis/sect54.html, last visited 01/03/2005.

Linking the Late Prehistoric site locations (GPS) with other relevant topographical, archaeological and bibliographical information.

Description [A description of the content of the resource, such as a book abstract or a synopsis of database contents]

The creation of a digital map of the Ioannina nomos, Northwestern Greece (scale 1:50000, HGRS87 and WGS84 map datum), the plotting of GPS measurements (Late prehistoric sites) and the implementation of a Geographic Information System, are used to reconstruct aspects of the Late Prehistoric landscape and the topographical archaeology of the Ioannina nomos. The GIS is accompanied by a database with relevant topographical, archaeological and bibliographical entries.

a. Data model:

Nom_ioan_isolines : Elevation contours of the Ioannina nomos, northwestern Greece (100m interval, HGRS87 map datum).

Nom_ioan_isolines84 : Elevation contours of the Ioannina nomos, northwestern Greece (100m interval, WGS84 map datum).

Nom_ioan_river : River polylines of the Ioannina nomos, northwestern Greece (HGRS87 map datum).

Nom_ioan_river84 : River polylines of the Ioannina nomos, northwestern Greece (WGS84 map datum).

Nomos_ioanninon : Contour of the Ioannina nomos, northwestern Greece (HGRS87 map datum).

Nomos_ioaninon84 : Contour of the Ioannina nomos, northwestern Greece (WGS84 map datum).

Points : Late Prehistoric locations of the Ioannina nomos (WGS84 map datum).

Pois87 : Late Prehistoric locations of the Ioannina nomos (HGRS87 map datum).

ioan_f.dbf : Database with archaeological and topographical information on Late Prehistoric locations of the Ioannina nomos.

b. Map data:

- *Computer hardware used*: Toshiba Satellite 2710XDVD (Pentium III. 500 MHz. 192 MB RAM), A60 Accugrid Opaque Digitizing tablet.
- *Computer software used*: mostly ESRI ArcView GIS 3.2. AutoCAD 13. CoordsGr (for converting among coordinate systems). Certain tasks were undertaken in TopoView 2.
- *Date the data were digitised*: June 2000 – August 2004.
- *Who did the work*: Georgios Papaioannou (gpapaioannou@hsnes.com).
- *Data format*: .dbf files, .shp files, .sbn files, .shx files, .prj files
- *Data source*: paper maps bought from East Cartographic View[2].
- *Scale of data capture*: 1:50000
- *Scale at which data are currently stored*: 1: 50000
- *Data quality*: error of no more than 5m average (RMS).
- *Purpose of data set creation*: to offer the first digital 1:50000 map of the Ioannina nomos, North western Greece (contour, elevation contours, rivers and streams)
- *Purpose for which you acquired the data (might differ from the previous information where the data were created by someone else for one purpose, and bought from them by you for another)*: to have the digital base map for accurately plotting archaeological sites with Late Prehistoric evidence and create the grounds for further site distribution studies.

c. GPS data:

- *Hardware used*: Garmin GPS III (UTM projection, map datum WGS84, later converted to HGRS87).
- *Computer software used*: ESRI ArcView GIS 3.2, CoordsGr (for converting among coordinate systems).
- *Date the data were captured*: summers 2000, 2001, and 2002.
- *Who did the work*: Georgios Papaioannou (gpapaioannou@hsnes.com).
- *Data format*: .dbf files, .shp files, .shx files, .prj files
- *Data quality*: average 6 satellites (always more than 3 in the outer ring of the receiver`s Satellite screen). errors of approximately 1-36 metres, with a mean of

[2] http://www.cartographic.com/xq/ASP/AreaID.3/RegionID.111/CategoryID.5/ProductID.6/europe/greece/qx/topographic_maps.asp, last visited 20/09/2004. last visited 20/09/2004.

about 6-13 metres (tested in real life operations using GPS readings to reach the points marked by wooden pegs).

- *Purpose of data set acquisition*: to accurately plot archaeological sites with Late Prehistoric evidence and create the grounds for further site distribution studies.

d. Main Database (ioannina.mdb):

- *Hardware used*: Toshiba Satellite 2710XDVD (Pentium III, 500 MHz, 192 MB RAM).
- *Computer software used*: Microsoft Access 2002.
- *Date the data were captured*: June 2001- December 2003.
- *Who did the work*: Georgios Papaioannou (gpapaioannou@hsnes.com).
- *Data format*: .mdb file
- *Purpose of data set acquisition*: to accompany Late Prehistoric site locations with relevant topographical, archaeological and bibliographical information.
- Field names and definitions:
    - *Site name*
    - *Other names* [other names by which a site is known]
    - *Location in UTM, northing*
    - *Location in UTM, easting*
    - *Location in UTM, zone*
    - *Elevation* [in metres above sea level (masl)]
    - *Demos/Koinotita* [the demos or koinotita where the site belongs to]
    - *Area: description* [brief description of the main environmental characteristics of the area where the site belongs to]
    - *Area: accessibility* [how to access the site from the capital of the demos or koinotita where the site belongs to)]
    - *Archaeology: degree of work* [brief description of the archaeological work that took place in the site (eg. surface collection, rescue excavation, systematic excavation etc)]
    - *Archaeology: architecture* [description of architectural remains found on the site]
    - *Archaeology: burials* [description of burial remains found on the site]
    - *Archaeology: pottery* [description of pottery found on the site]
    - *Archaeology: lithic* [description of lithics found on the site]
    - *Archaeology: bronze* [description of bronze artefacts found on the site]

- *Archaeology: other finds* [description of other finds found on the site]
- *Chronology* [relative or absolute chronology of the site]
- *Bibliographical references* [references refer to Bibliographical catalogue (see ioannina_bibliography.doc in the CD-ROM)]
- *Discussion*
- *Comments* [write here any additional comments, points for further work, future amendments, notes]
- *Date of last update*
- *Name of last update-er*

e. GIS Database (ioan_f.dbf). This is a condense version of ioannina.mdb to be imported to ArcView 3.2:

- *Site name*
- *Location in UTM, northing*
- *Location in UTM, easting*
- *Location in UTM, zone*
- *Elevation* [in metres above sea level (masl)]
- *Demos/Koinotita* [the demos or koinotita where the site belongs to]
- *Accessibility* [how to access the site from the capital of the demos or koinotita where the site belongs to)]
- *Finds* [brief description of the archaeological work that took place in the site (eg. surface collection, rescue excavation, systematic excavation etc)]
- *Aarchitecture* [description of architectural remains found on the site]
- *Burials* [description of burial remains found on the site]
- *Pottery* [description of pottery found on the site]
- *Lithic* [description of lithics found on the site]
- *Bronze* [description of bronze artefacts found on the site]
- *Other finds* [description of other finds found on the site]
- *Chronology* [relative or absolute chronology of the site]
- *Last updated*
- *Updated by*

Publisher [The entity(s) responsible for facilitating availability of the resource, such as a publisher, distributor, or a corporate entity]

Georgios Papaioannou [gpapaioannou@hsnes.com], the 12th Ephorate of Prehistoric and Classical Antiquities [16 Papazoglou & Kanigos Str, 45444, Ioannina, Greece], the 8th Ephorate of Byzantine Antiquities [Byzantine Museum, 45221, Ioannina, Greece].

Contributors [This element is not used by ADS, as it causes too much confusion amongst users]

Date [Dates associated with the creation and dissemination of the resource. These dates should not be confused with those related to the *content* of a resource (AD 43, in a database of artefacts from the Roman Conquest of southern Britain) or its *subject* (1812, in relation to Tchaikovsky's eponymous overture), both of which are dealt with in other elements]

Work started in April 2000, completed in August 2004.

Type [The general form of a resource, such as text, image, etc]

Maps (elevation contours, rivers and streams polylines),

GPS data (points, UTM)

Format [The format, either physical (e.g. book, CD–ROM) or electronic (e.g. DXF file, HTML web page), of the resource being described]

Electronic format (.dbf files, .shp files, .sbn files, .shx files, .prj files, mdb files)

Identifier [A text string or number used as a unique identity for the resource. Examples include a resource-specific URL or ftp address, an excavation site code, or archival museum shelving number]

The 'LPIN dataset' is the code name to be used when contacting the publishers (see above).

Source [Any important earlier work(s) from which this resource is derived]

For digital mapping, the paper maps of the Russian Military Topographic Directorate of the General Staff map were used (scale 1:50000, Gauss-Kruger projection).

For the GPS data (site locations, UTM), a GARMIN GPS III unit was used.

For the database, bibliography and extensive personal research.

Language [Language(s) of the intellectual content of the resource (i.e. English or Latin, rather than C++ or Pascal)]

English

Relation [Relationship to other resources. For example, the GIS resource being described might be part of an SMR or landscape study, both of which might have entries of their own to which this element could provide a link]

Data of this resource are compatible with the Nikopolis Project datasets, which refer to the archaeology and the topography of the neighbouring to the south Preveza nomos (for the latest overview on the Nikopolis Project datasets available until September 2004 see Tartaron, T., 1996: *Bronze Age Settlement and Subsistence in Southern Epirus, Greece*, unpublished PhD thesis, Boston University)

Coverage [The spatial and temporal extent(s) pertaining to the resource. In both cases, coverage relates to the *content* of the resource, rather than to its collection or management. Likely coverages include the spatial location (whether a grid reference, place name [Skara Brae], or more ephemeral locator) and temporal period (whether a date, date range, or period label [Neolithic]) of the Skara Brae village and exclude the location of the museum in which the artefacts might now be found]

Spatial extent: the Ioannina nomos, Greece, as defined in September 2004.

Temporal extent: Late Prehistory of the Ioannina nomos

Rights [This element is intended to be a link to a copyright notice, a rights management statement, or a software tool capable of providing such information in a dynamic fashion. The intent of specifying this field is to allow data providers a means to associate terms and conditions or copyright statements with a resource or collection of resources]

Software Rights: King's College London.

Mapping Rights: Georgios Papaioannou, the Greek Government (the Hellenic Army Geographical Service).

GPS data Rights: Georgios Papaioannou.

Archaeological Information Rights (content and images): Georgios Papaioannou, the 12th Ephorate of Prehistoric and Classical Antiquities, individual authors, illustrators and photographers as mentioned in the database.

No use, copy and/or reproduction of any kind of data is allowed without the prior permission of the aforementioned individuals and organisations.

PLATE 1

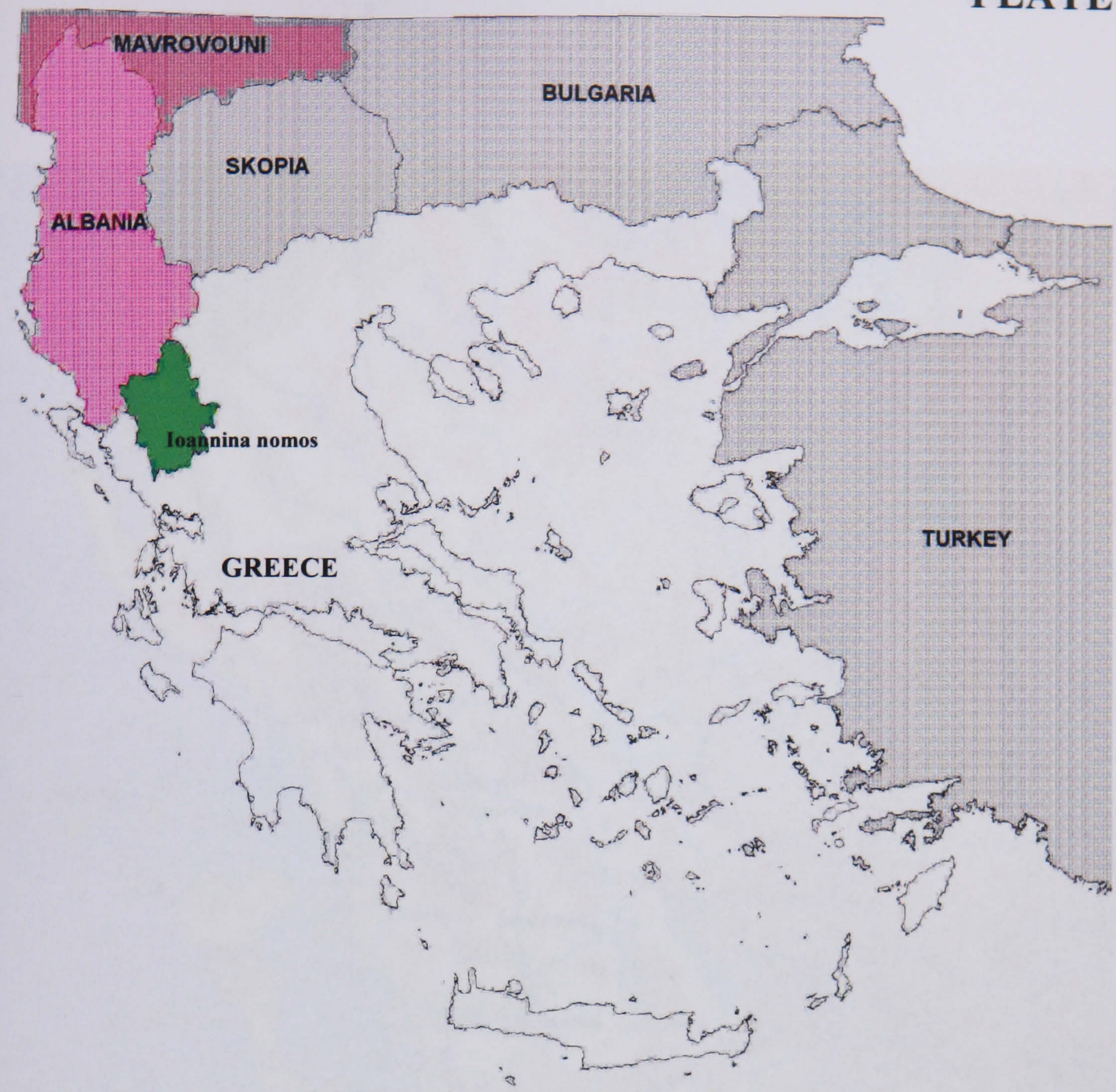


Plate 1a: The position of the Ioannina nomos, Epirus, Greece.

Plate 1b: The nomoi (prefectures) of Epirus, Greece.

Plate 1a,b: Ioannina nomos, Epirus, Greece.

PLATE 2

Plate 2: Epirus: Geophysical map (from Sakellariou 1997: 13).

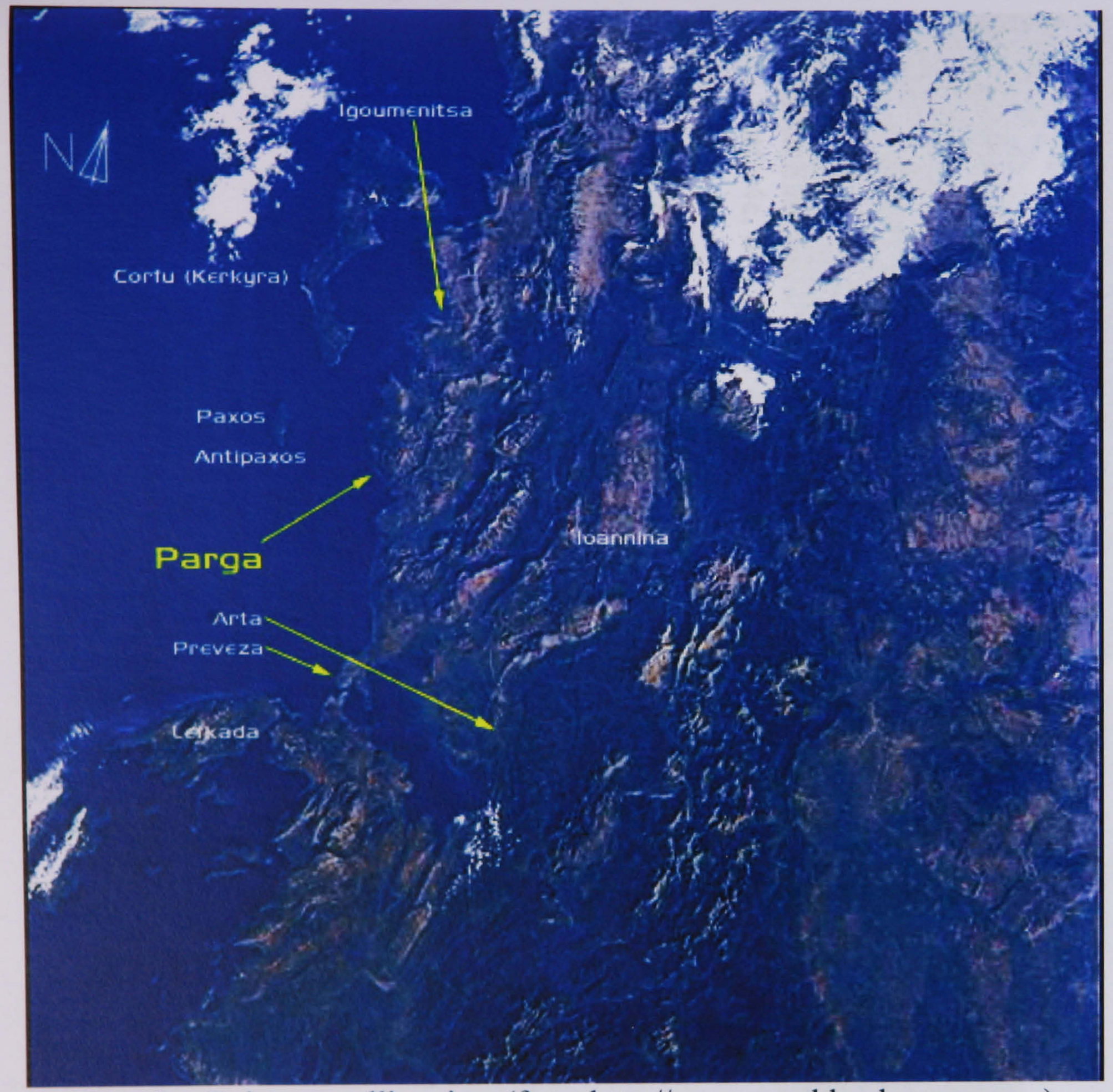


Plate 3a: Epirus: satellite view (from http://www.greeklandscapes.com).

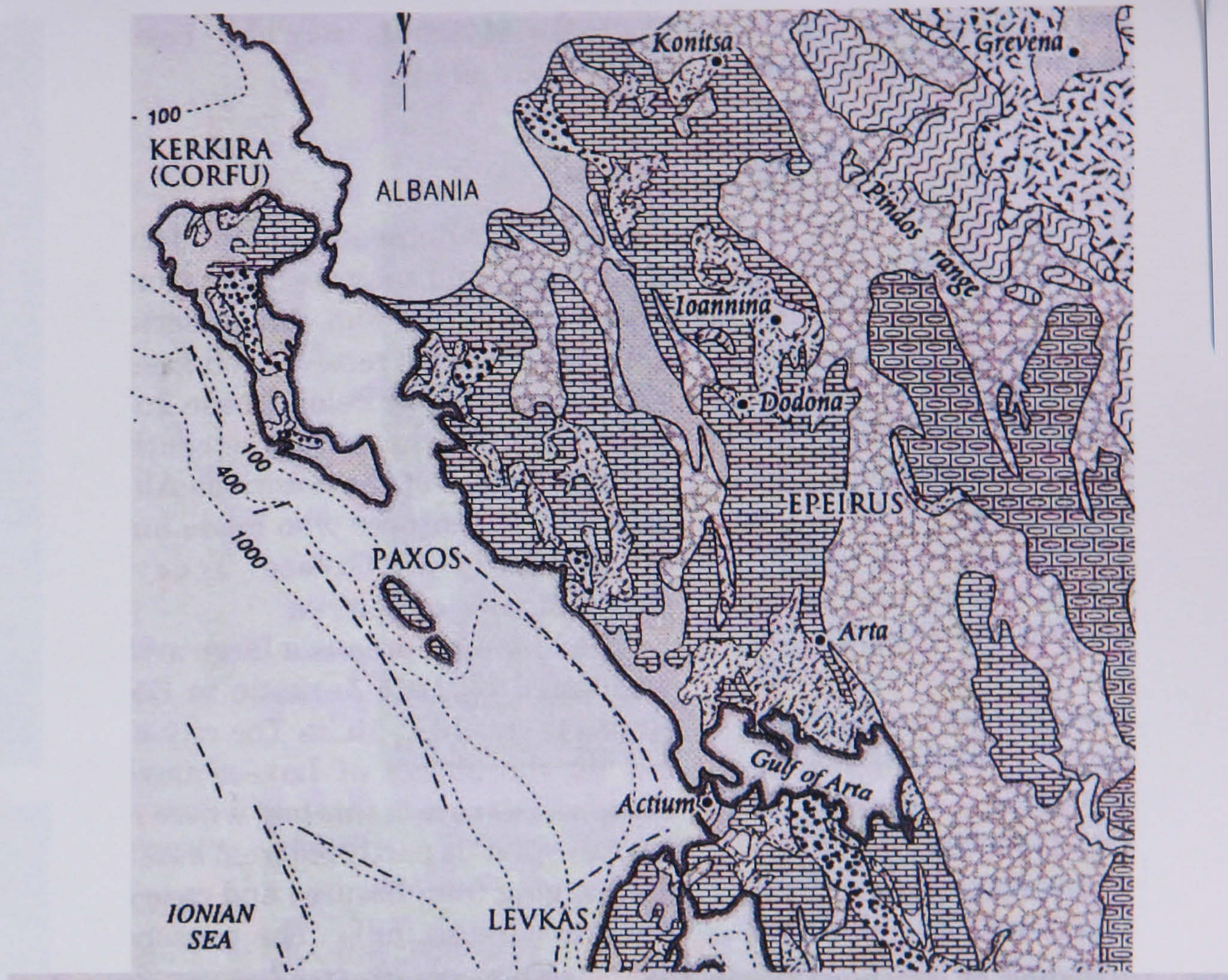


Plate 3b: The geology of Epirus
(from Higgins & Higgins 1996: 97).

PLATE 3

Plate 3a-b: Epirus: satellite view and geological map.

PLATE 4

Plate 4a: Mt. Tzoumerka, 2393 masl.
(from Sakellariou 1997: 22)

Plate 4b: The Vikos Gorge, and
Voidomates river.
(from Sakellariou 1997: 17)

Plate 4c, d: Upland valleys in Epirus (from Nitsiakos & Arapoglou 2001: 8, 15)

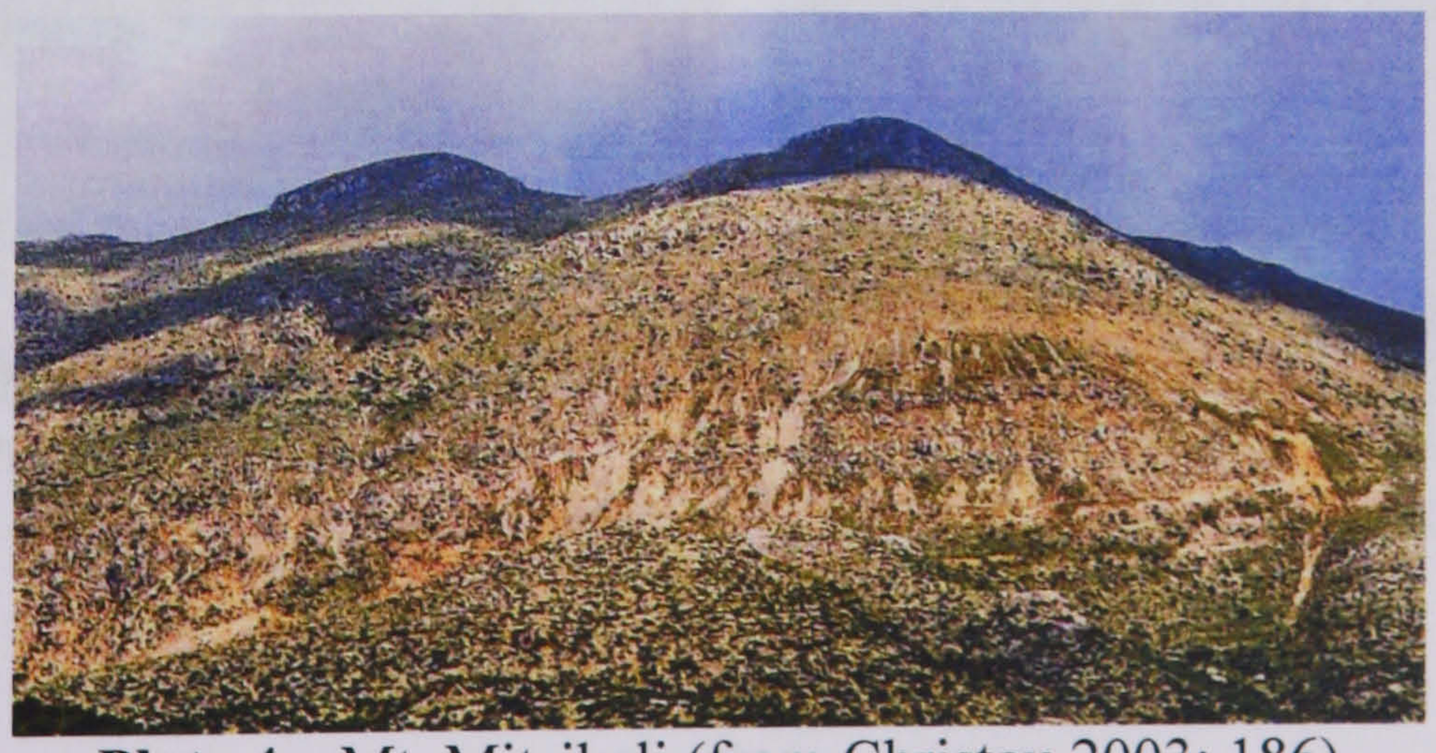


Plate 4e: Mt. Mitsikeli (from Christou 2003: 186)

Plate 4a-e: Upland areas in Epirus.

PLATE 5

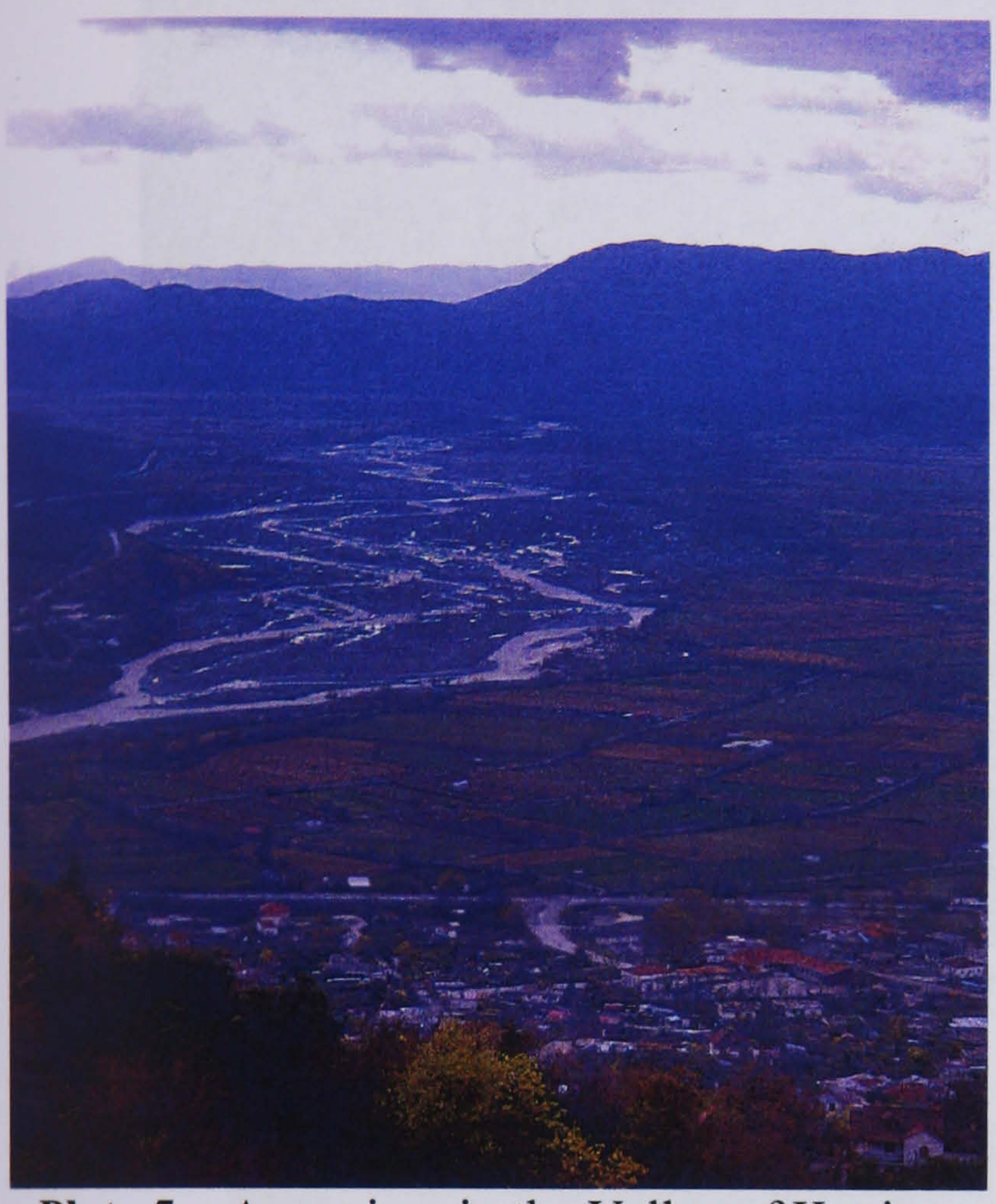


Plate 5a: Aoos river in the Valley of Konitsa
(from Nitsiakos & Arapoglou 2001: 30)

Plate 5b: The Acheron river
(from Sakellariou 1997: 21)

Plate 5c: The Drakolimni lake
(from Nitsiakos & Arapoglou 2001: 14)

Plate 5d: The Zeravina lake
(from Nitsiakos & Arapoglou 2001: 50)

Plate 5a-d: Lowland areas in Epirus, rivers, and lakes.

PLATE 6

Plate 6a: The Ioannina plateau (from Nitsiakos & Arapoglou 2001: 20)

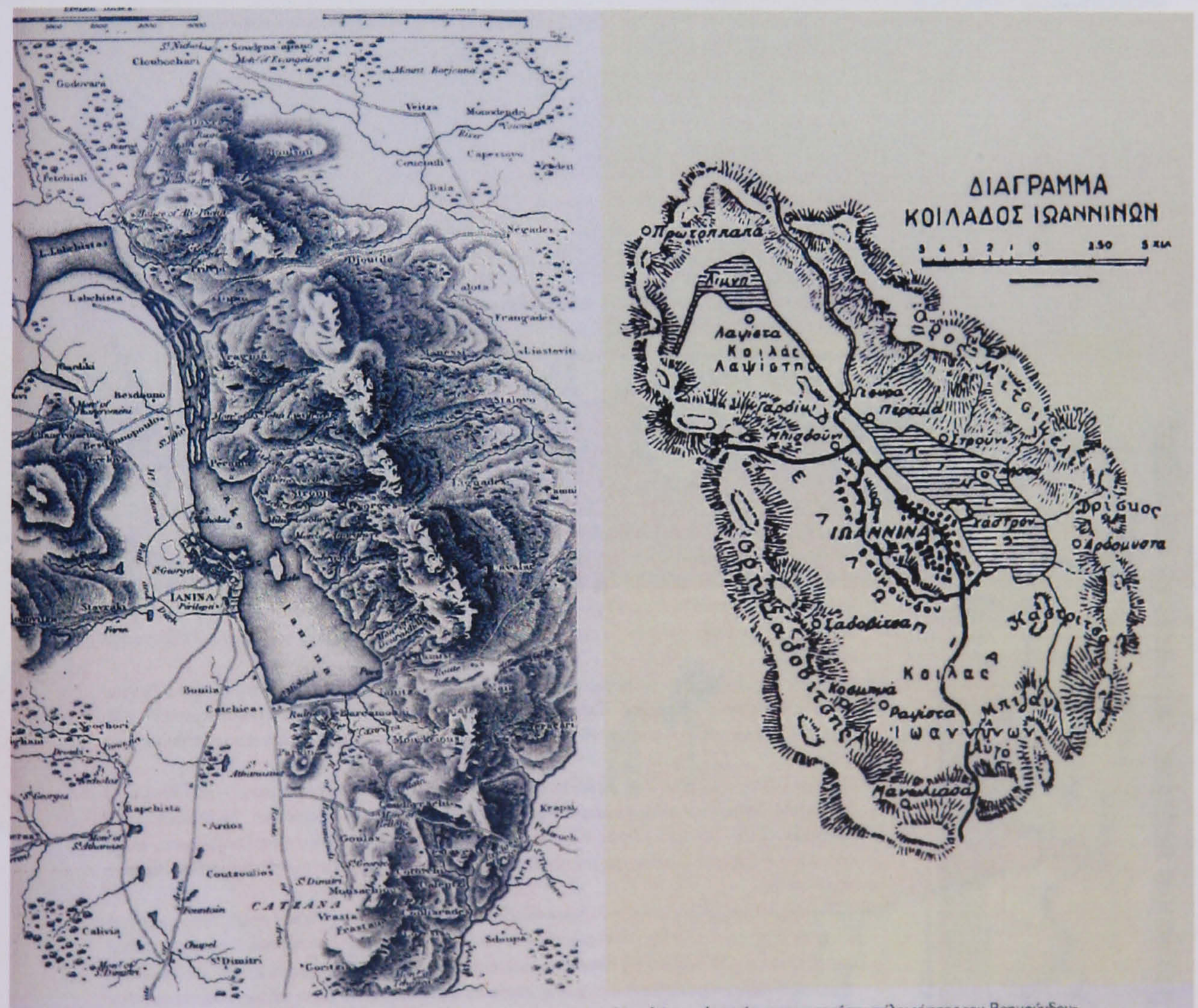


Plate 6b: The lake Pamvoris: the lakes of Ioannina and Lapsista united (from Pappas 2001: 19)

Plate 6a-b: The Ioannina plateau and the lake Pamvotis.

Plate 7a: Ioannina nomos: division in επαρχίες
(from Nitsiakos et al. 1998: 68)

Plate 7b: Ioannina nomos: the Ottoman division
(from Nitsiakos et al. 1998: 67)

Plate 7a-b: Ioannina nomos: pre-Kapodistrias Plan administrative divisions.

PLATE 7

PLATE 8

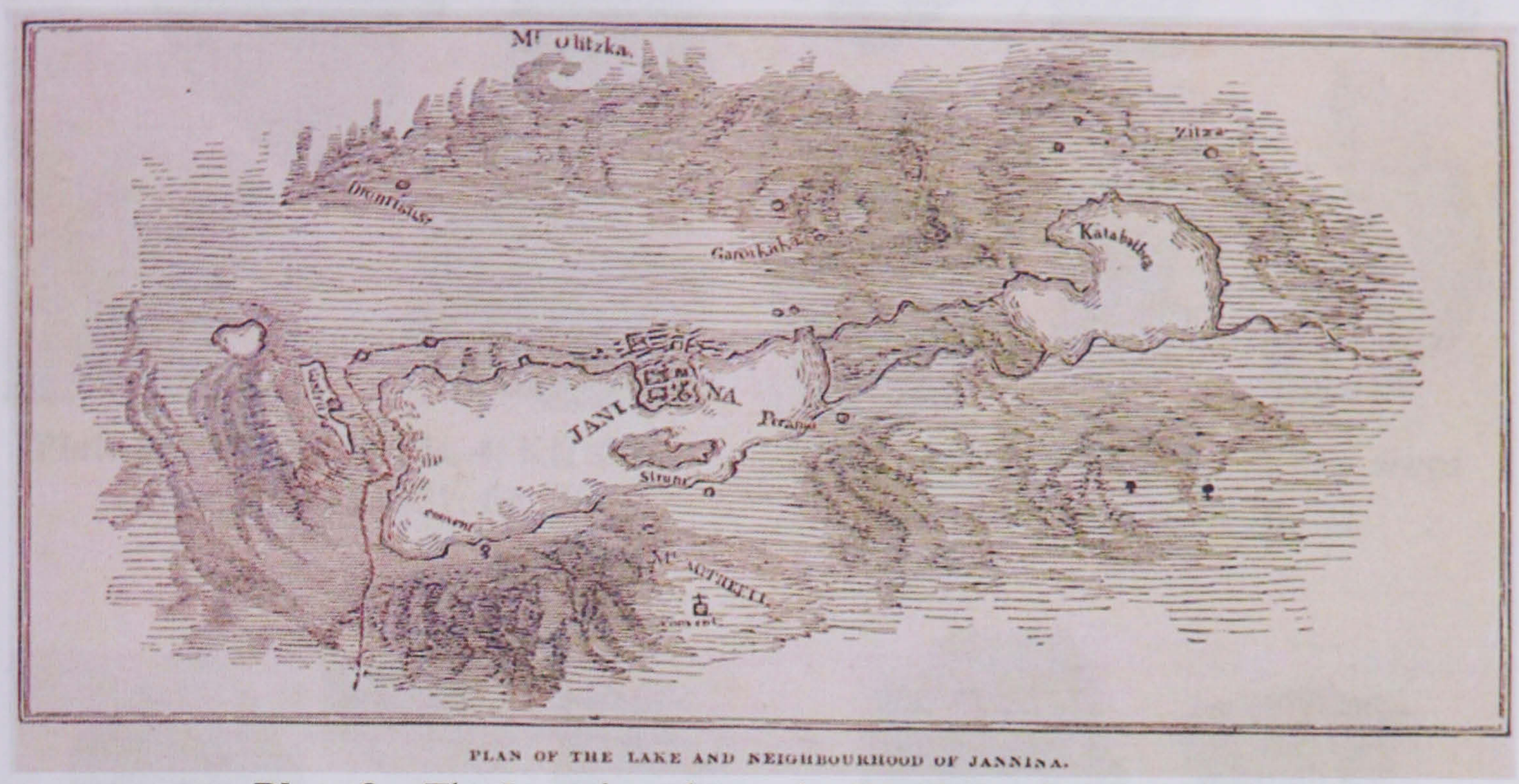


Plate 8a: The Ioannina plateau by Wordsworth (1841: 248)

Plate 8b: The Ioannina plateau by Chassiotis (1867: pl. B)

Plate 8a-b: The Ioannina plateau by Wordsworth and Chassiotis.

PLATE 9

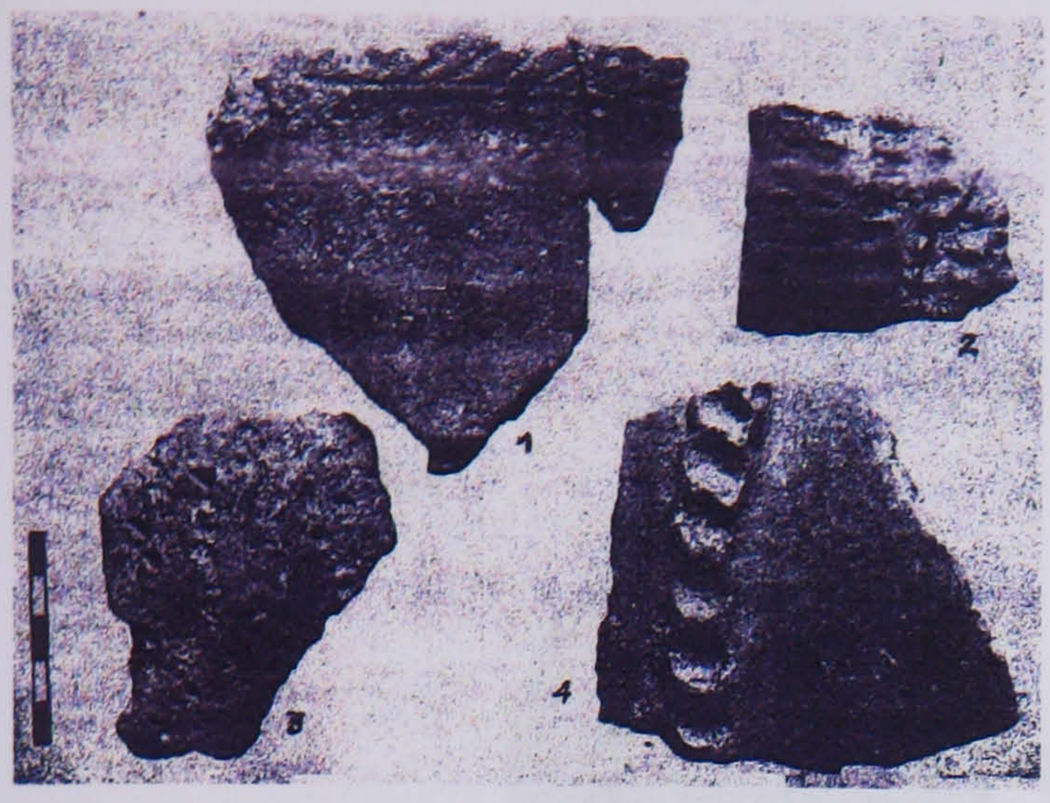


Plate 9a: 1-3: KI sherds, 4: KII sherd (from Dakaris 1951: fig. 2).

Plate 9b: 1-7: KII sherds, 8: KIV sherd (from Dakaris 1951: fig. 3).

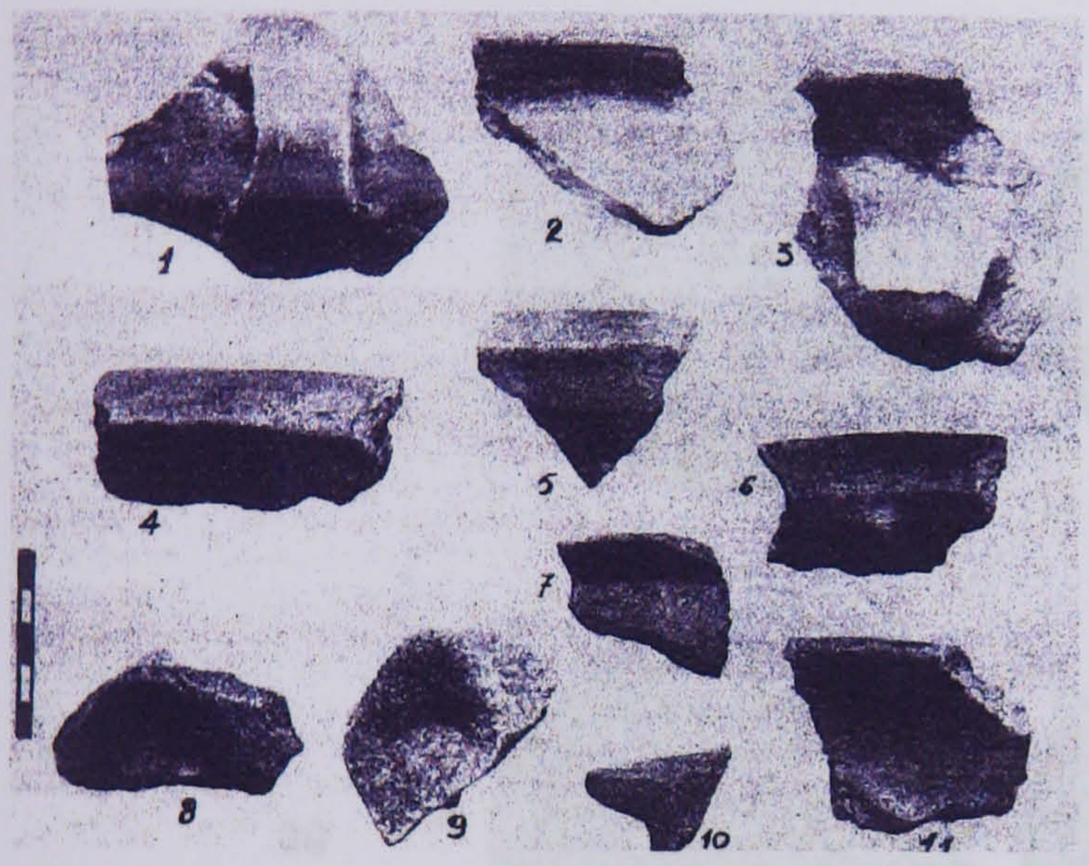


Plate 9c: KIII sherds (from Dakaris 1951: fig. 4).

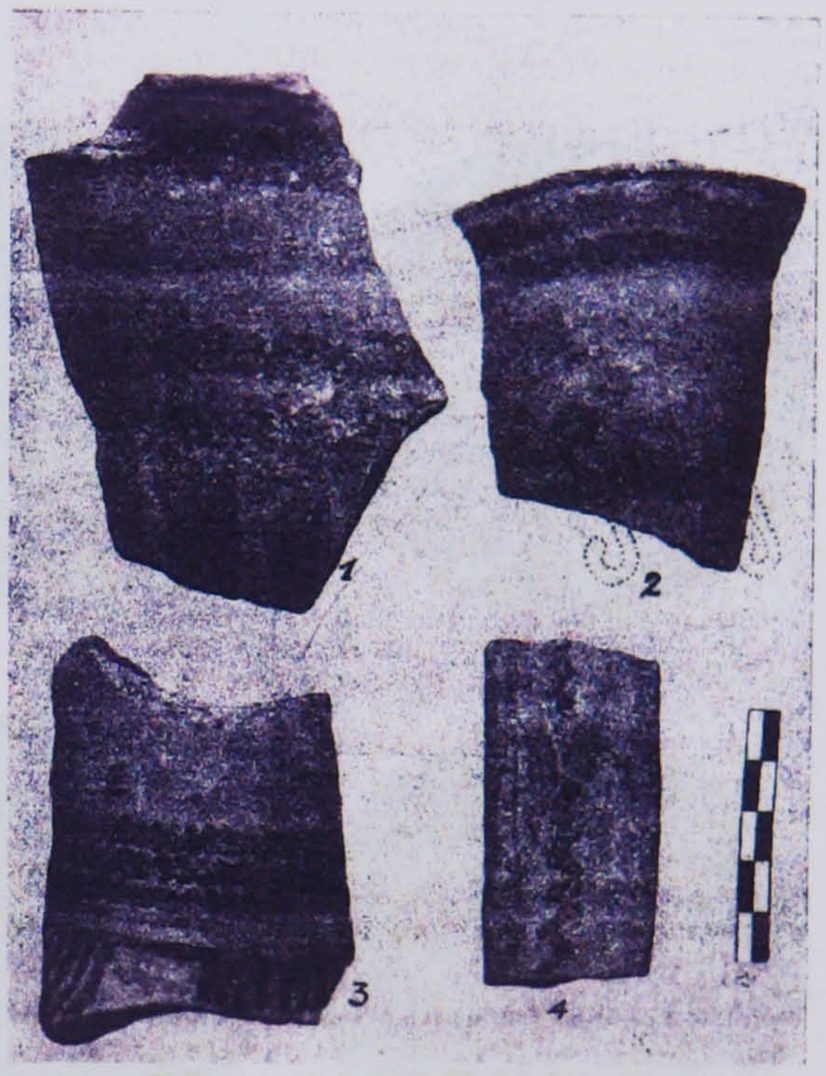


Plate 9d: KIV sherds (from Dakaris 1951: fig. 6)

Plate 9e: KIV sherds (from Dakaris 1951: fig. 5).

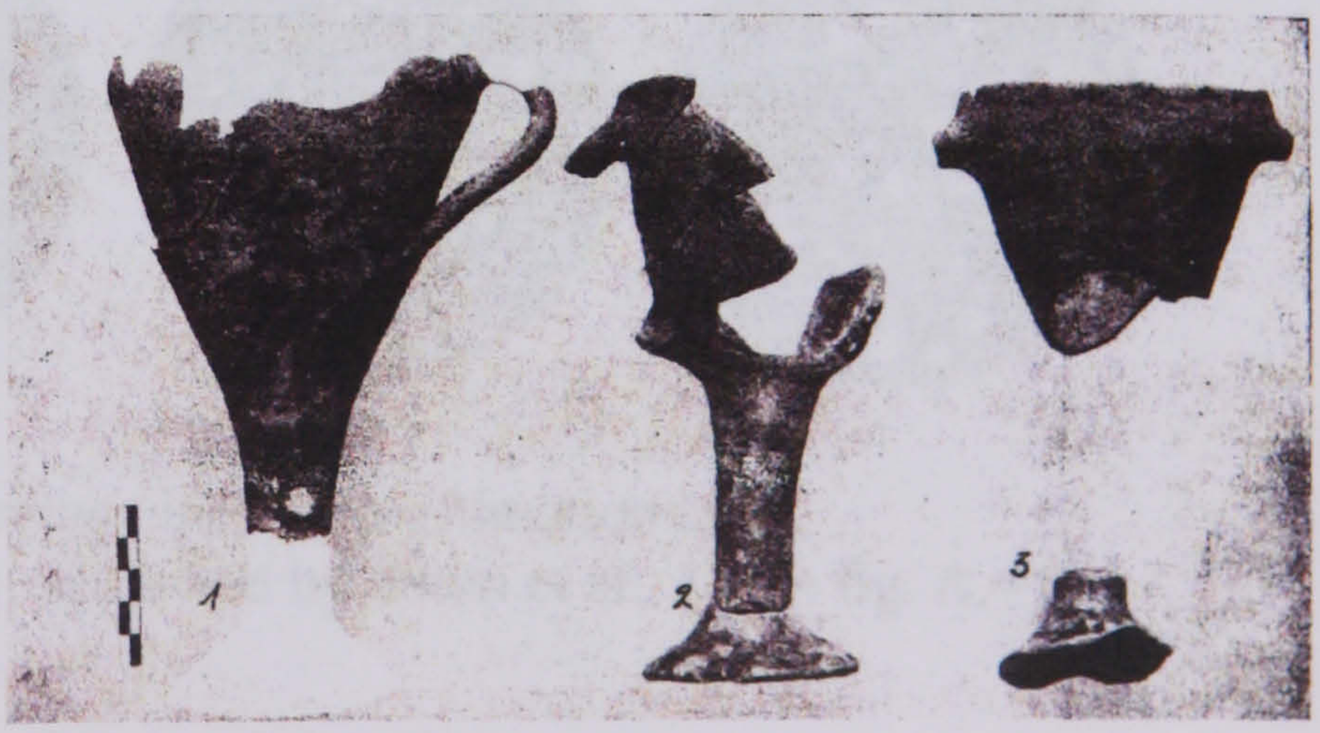


Plate 9f: Mycenaean sherds (from Dakaris 1951: fig. 7).

Plate 9a-f: Classes of the Kastritsa classification scheme.

PLATE 10

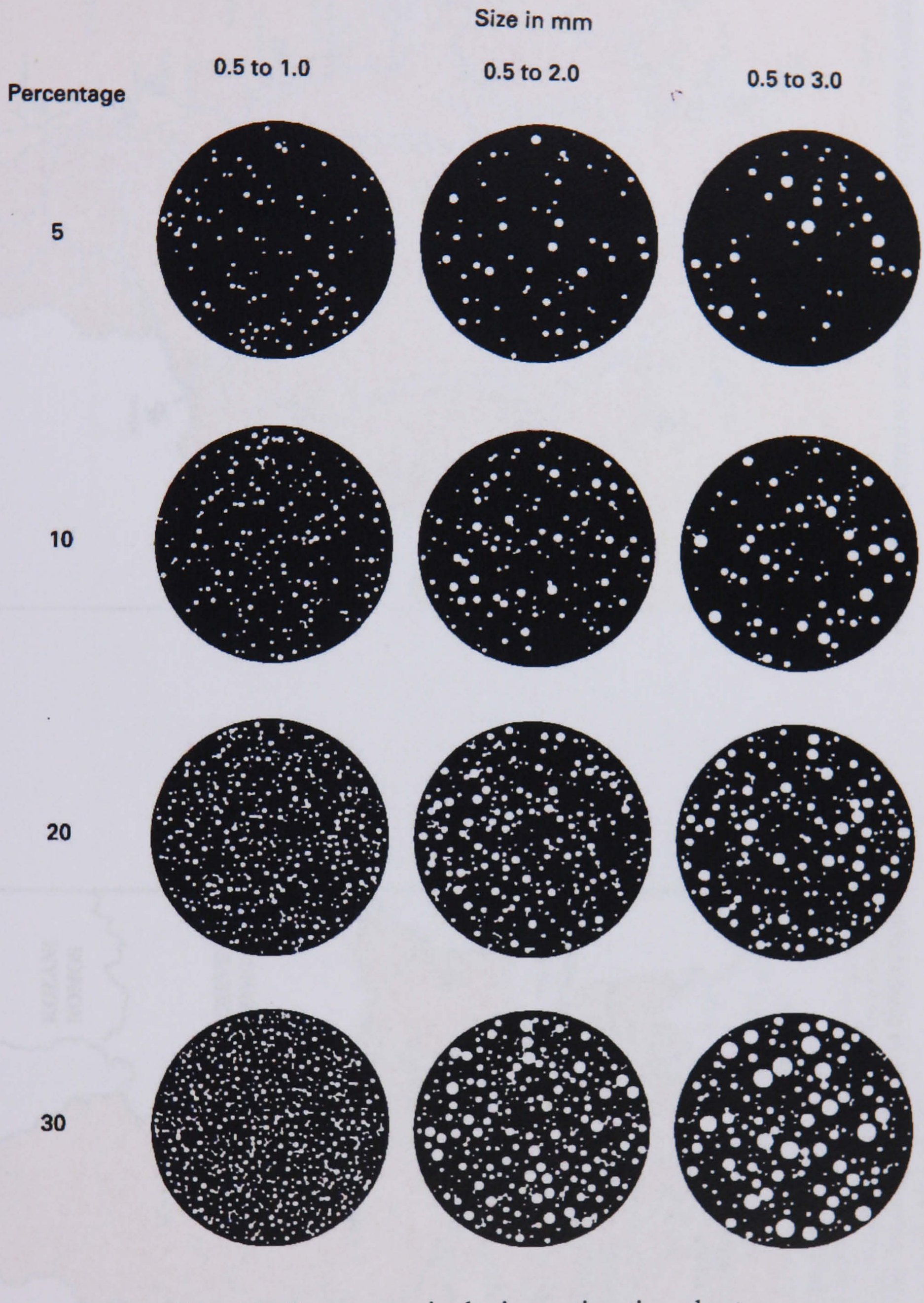


Plate 10: Percentage inclusion estimation chart
(after Mathew et al. 1991, as quoted by Orton et al., 1993: fig. A.4)

Plate 10: Percentage inclusion estimation chart.

Plate 11a: Districts of the Ioannina nomos in this research (site numbers noted)

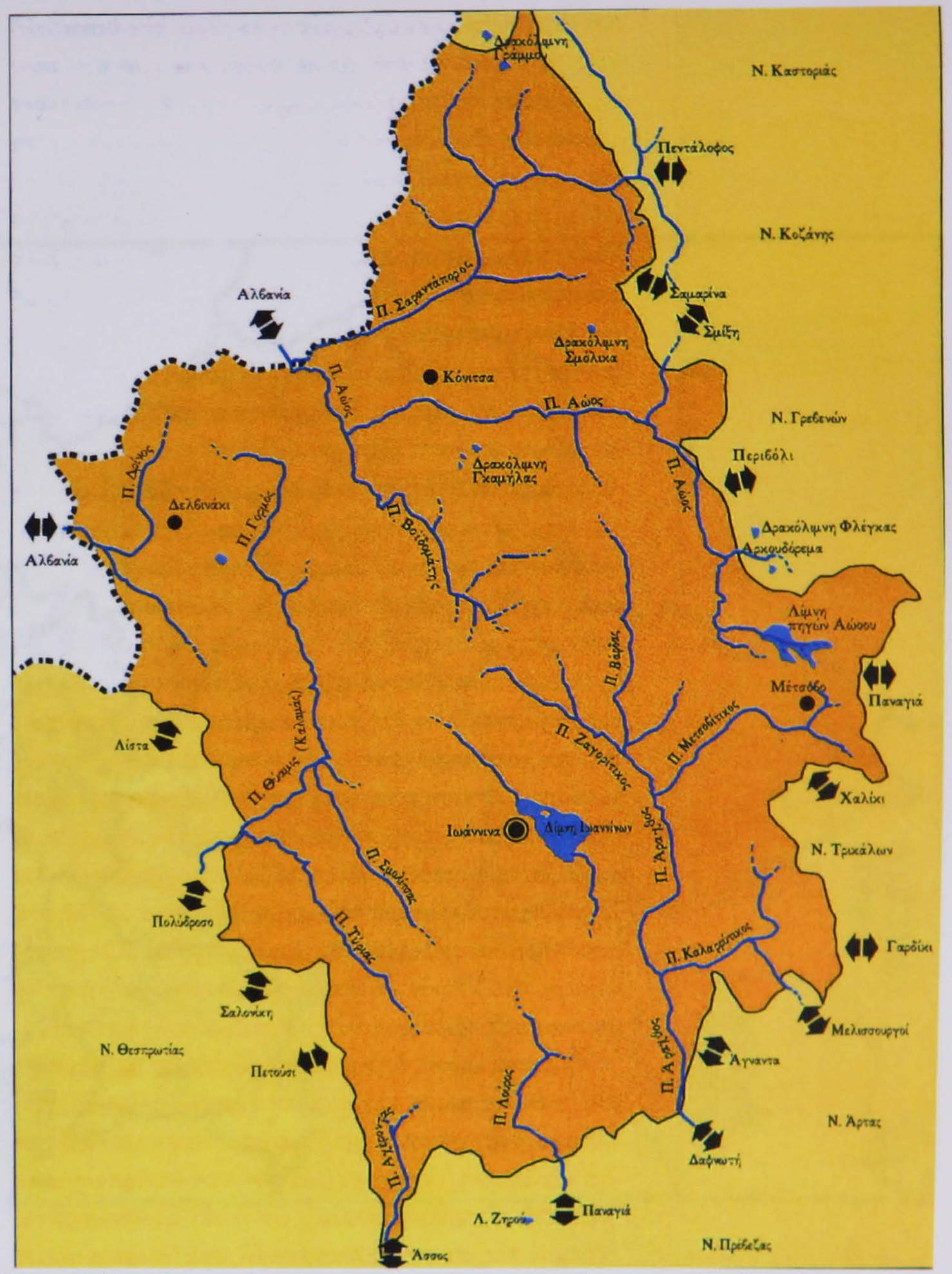


Plate 11b: Ioannina nomos: rivers and communication passes (from Nitsiakos et al. 1998: 28)

PLATE 11

Plate 11a-b: Ioannina nomos: pre-Kapodistrias Plan administrative divisions.

Plate 12a: The Konitsa district

Plate 12b: Area of Lakka in the Aoos river
(Nitsiakos et al. 1998: 142)

Plate 12c: Aoos river
(Nitsiakos & Arapoglou 2001: 25)

Plate 12a-c: The Konitsa district.

PLATE 13

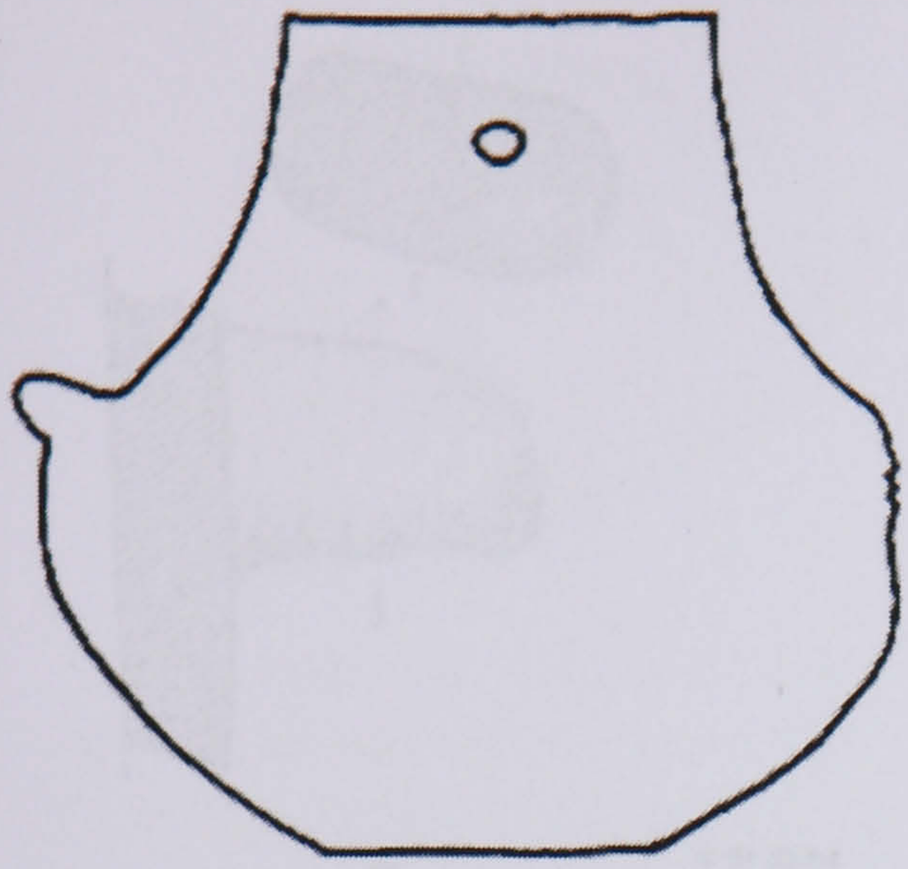


Plate 13a: Pottery from Distrato (from Hammond 1967: fig. 10j)

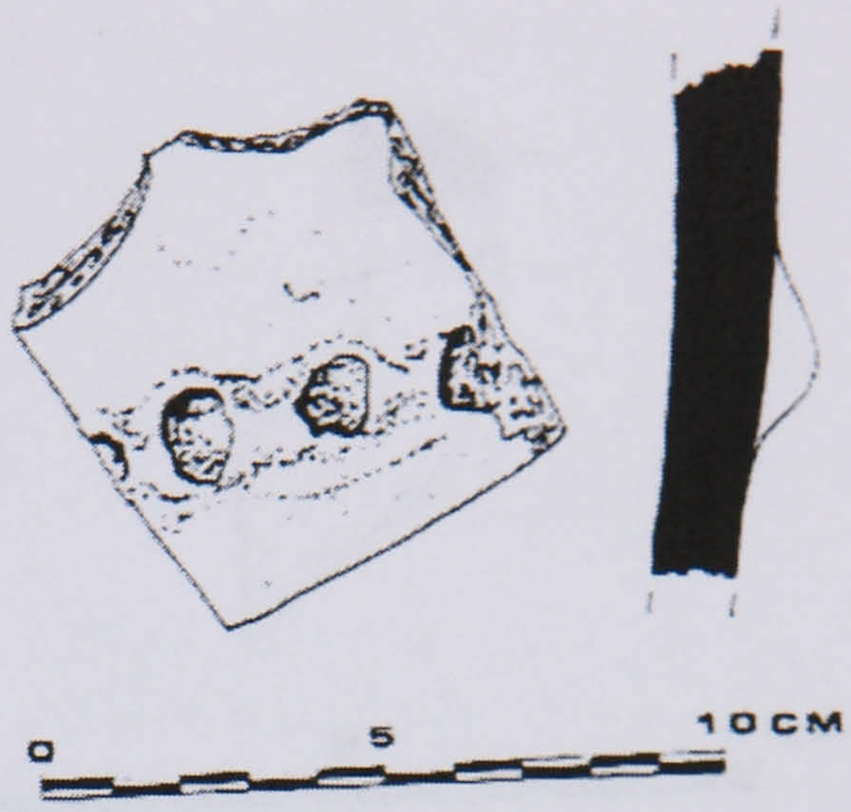


Plate 13b: Pottery from Iliorachi, Bichli (from Douzougli 1996: fig. 3γ)

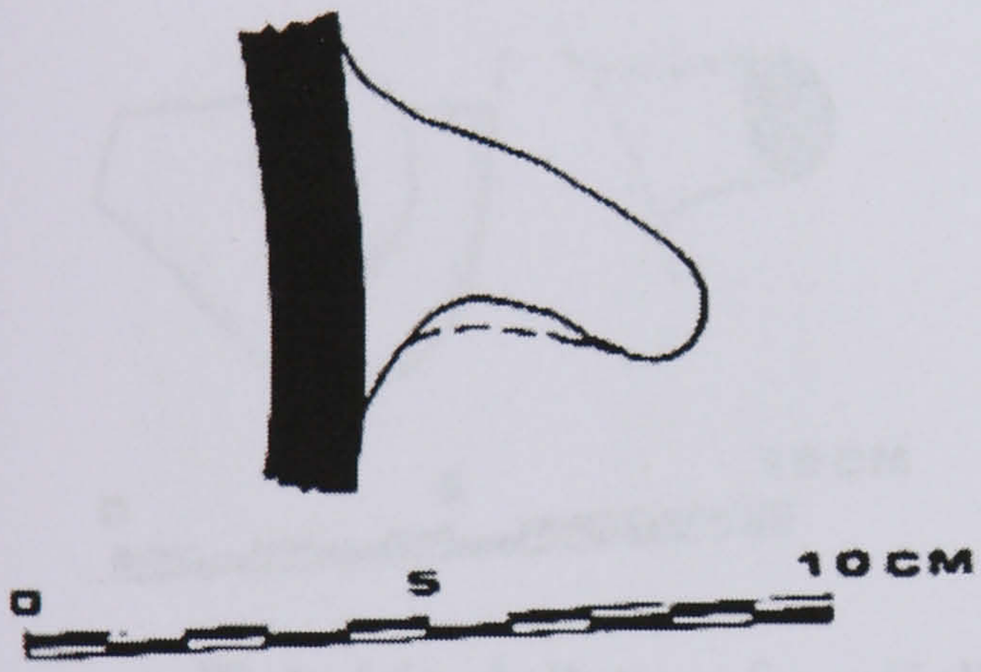


Plate 13c: Pottery from Iliorachi, Bichli (from Douzougli 1996: fig.3ε)

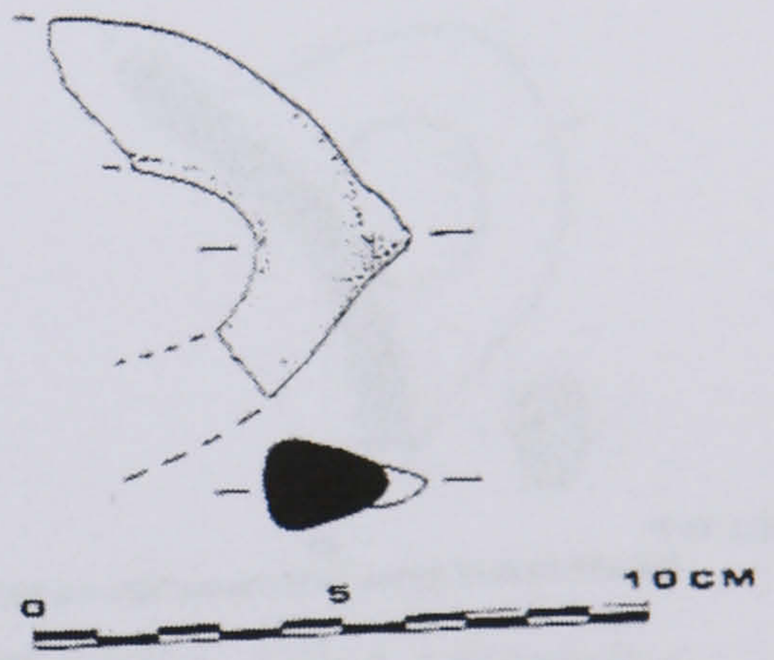
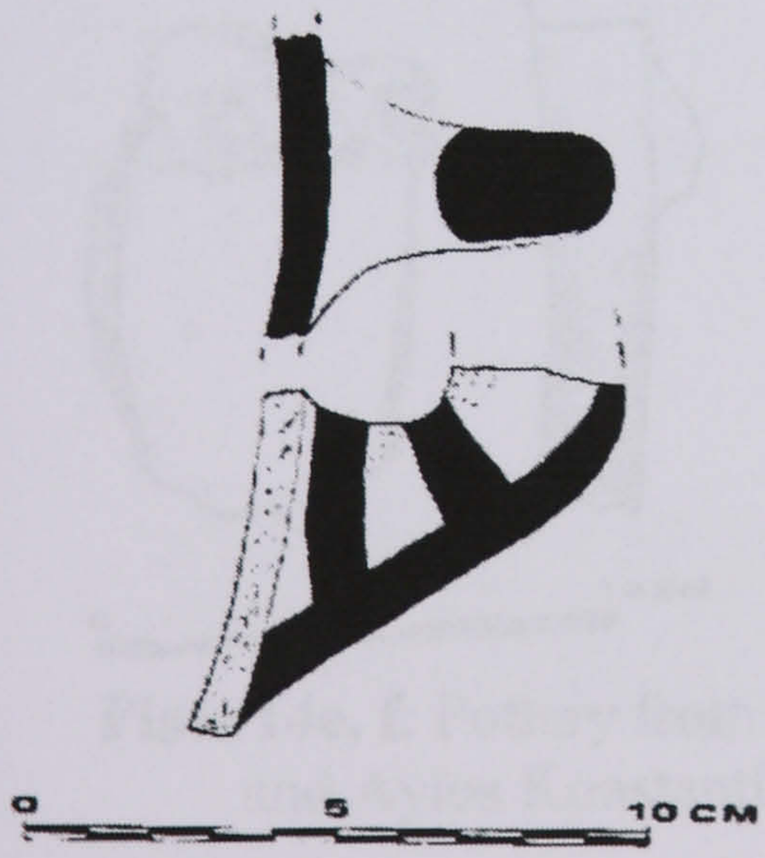


Plate 13d: Pottery from Iriorachi, Agia Triada (from Douzougli 1996: fig. 3η)



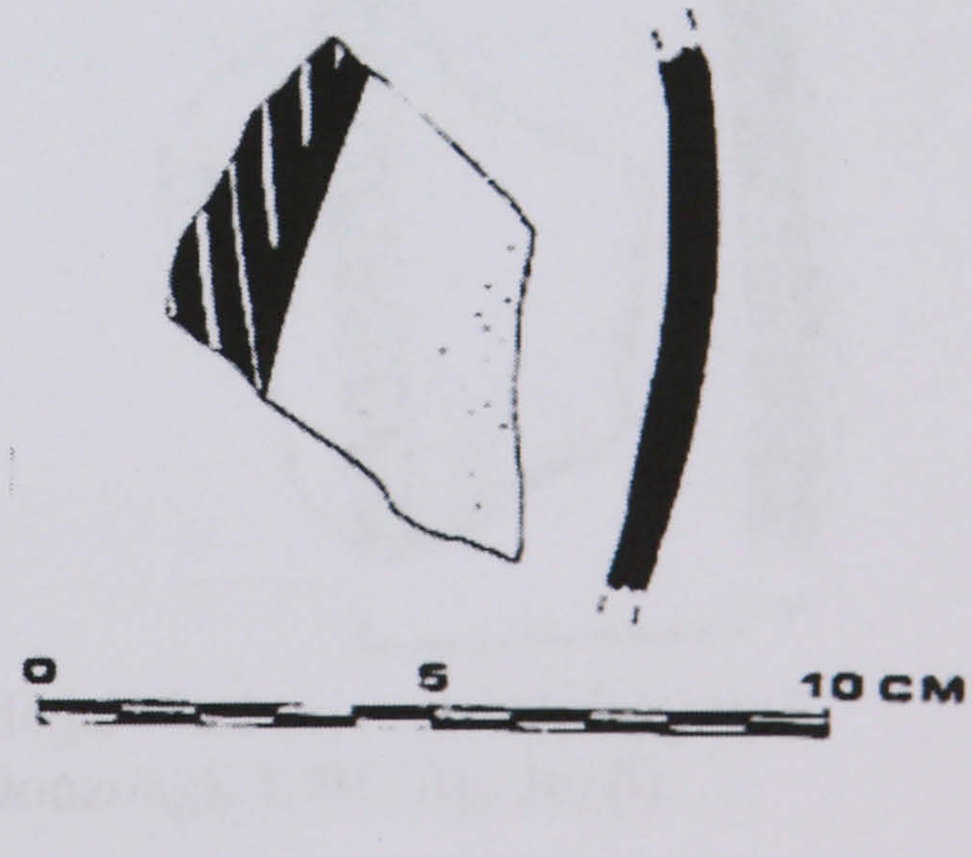


Plate 13e, f: Pottery from Kleidonia (from Douzougli 1996: fig. 6β, γ)

Plate 13a-f: Finds from Ditrato, Iliorachi and Kleidonia in the Konitsa district.

PLATE 14

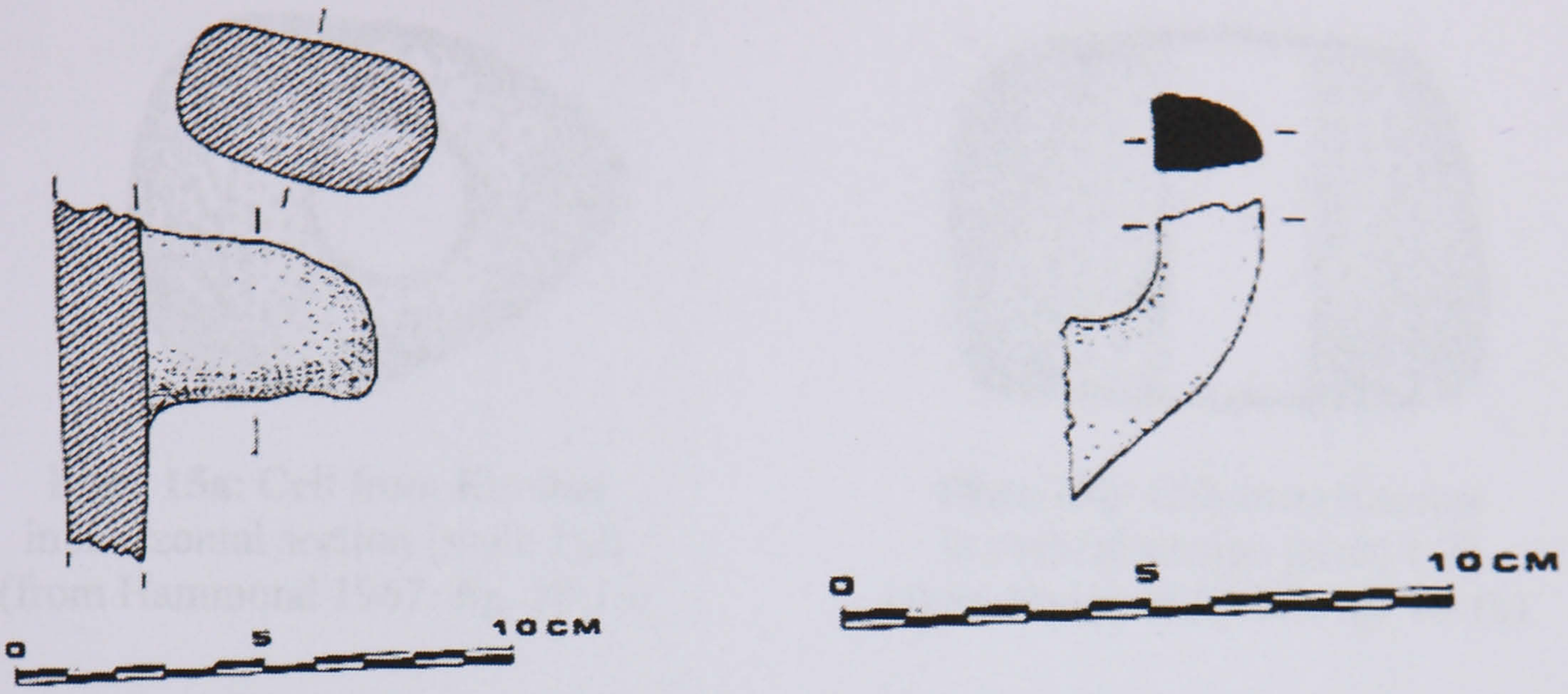


Plate 14a, b: Pottery from Kallithea/MegaliGoritsa, Ayios Athanasios and Ayios Konstantinos (from Douzougli 1996: fig. 3δ, ζ)

Plate 14c, d: Pottery from Kallithea/MegaliGoritsa, Ayios Athanasios and Ayios Konstantinos (from Douzougli 1996: fig. 3θ, κ)

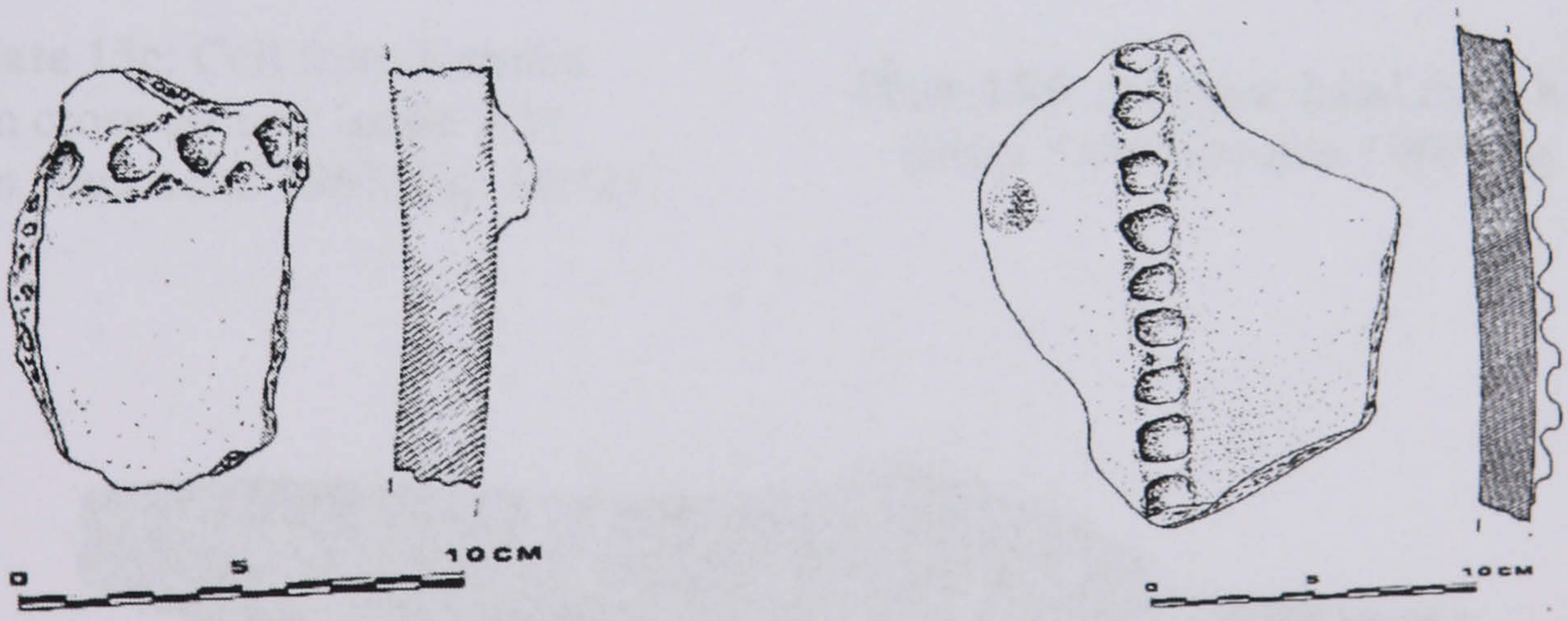


Plate 14e, f: Pottery from Kallithea/MegaliGoritsa, Ayios Athanasios and Ayios Konstantinos (from Douzougli 1996: fig. 3α, β)

Plate 14a-f: Finds from Kallithea/Megali Goritsa in Konitsa district.

PLATE 15

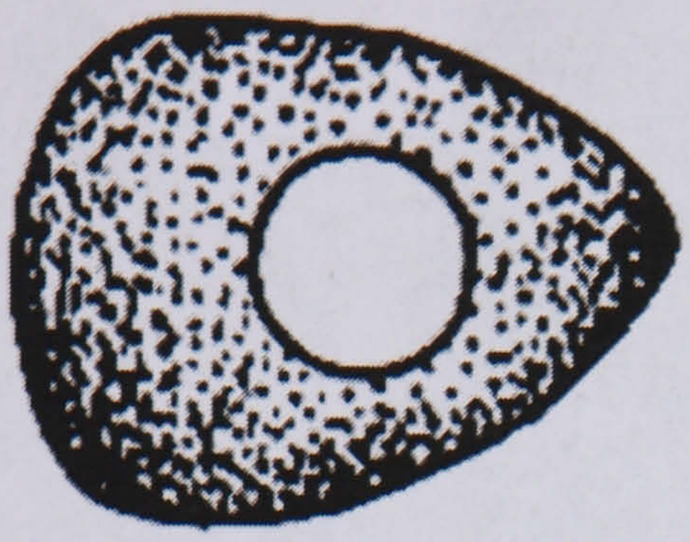


Plate 15a: Celt from Konitsa
in horizontal section [scale 1:2]
(from Hammond 1967: fig. 18:1a)

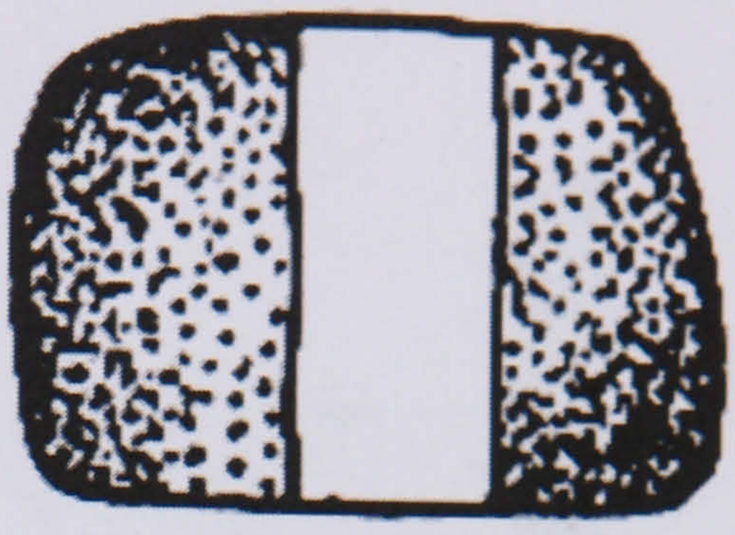


Plate 15b: Celt from Konitsa
in vertical section [scale 1:2]
(from Hammond 1967: fig. 18:1b)

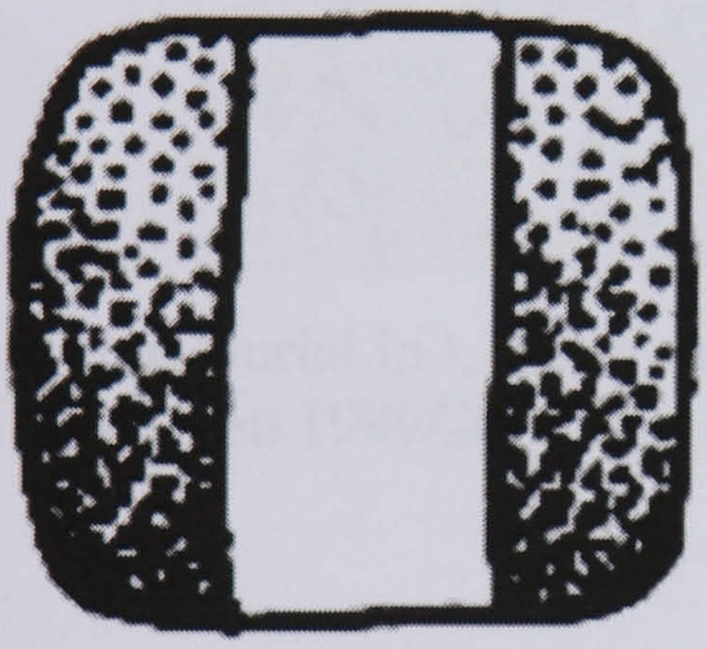


Plate 15c: Celt from Konitsa
in cross-section [scale 1:2]
(from Hammond 1967: fig. 18:1c)

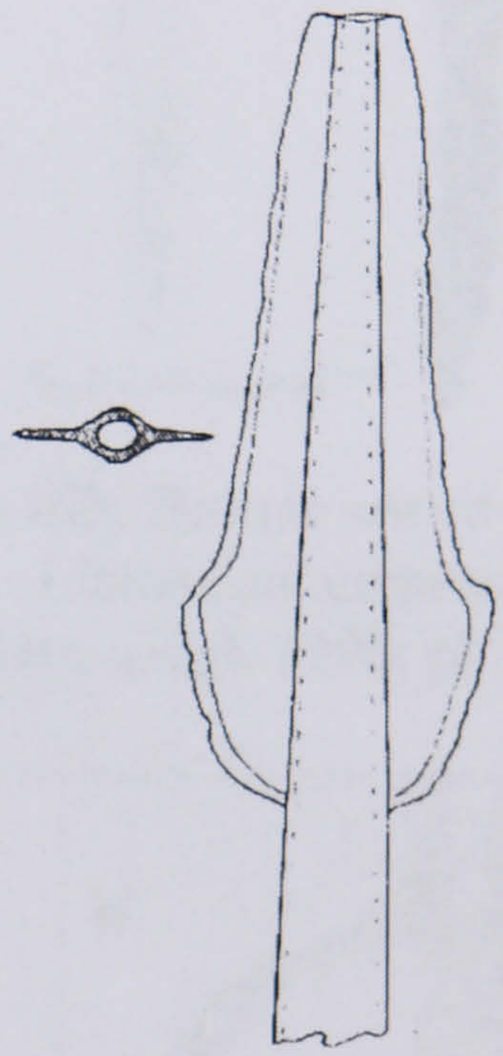


Plate 15d: the spear-head from Konitsa
(from Vokotopoulou 1969: fig. 7α)

Plate 15e: the spear-head from Konitsa (from Papadopoulos 1976: pl. 20: 3324)

Plate 15a- e: Finds from Konitsa School of Agriculture in the Konitsa district.

PLATE 16

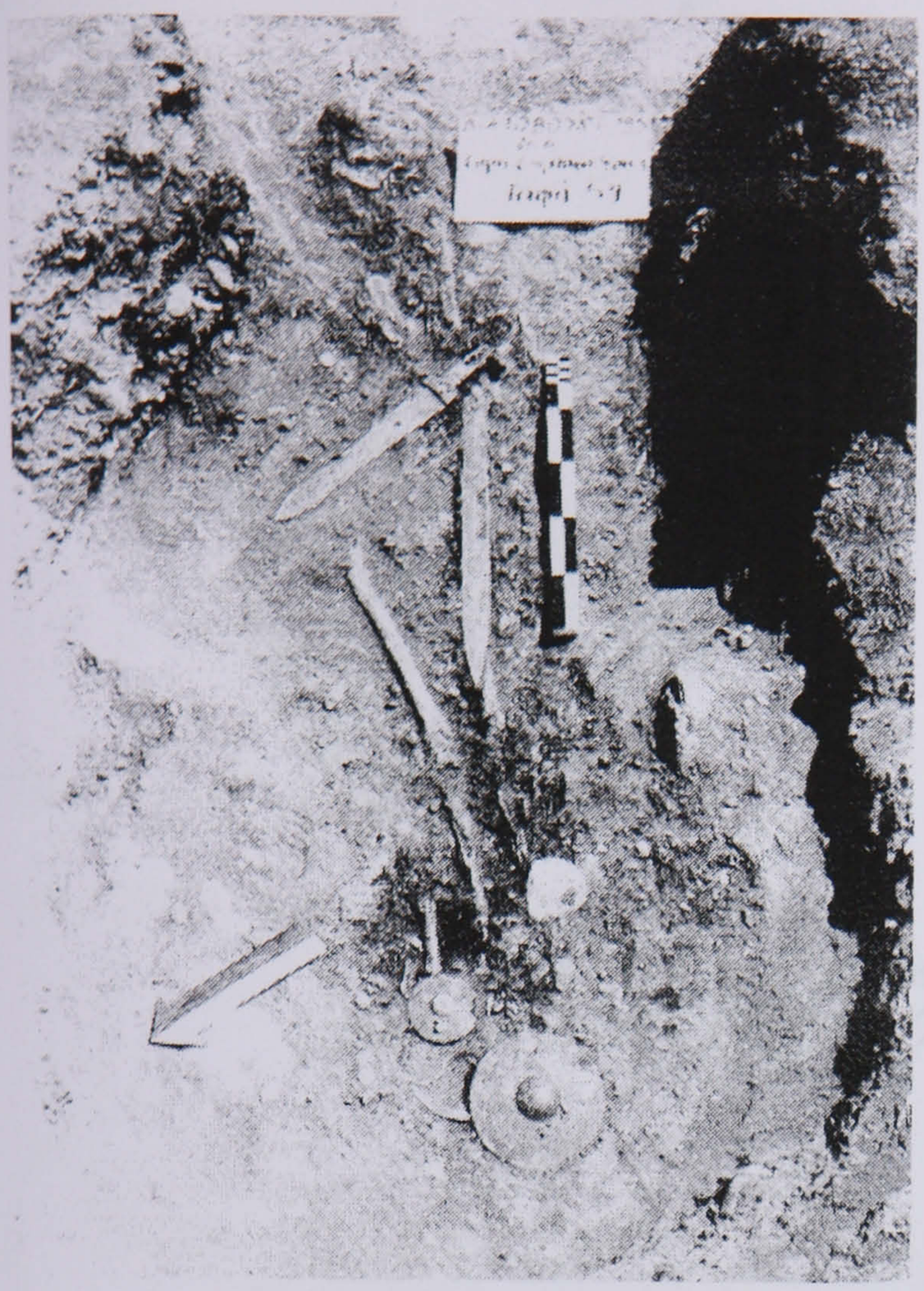


Plate 16a: Burial in Liatovouni
(from Blackman 1999/2000: pl. 91)

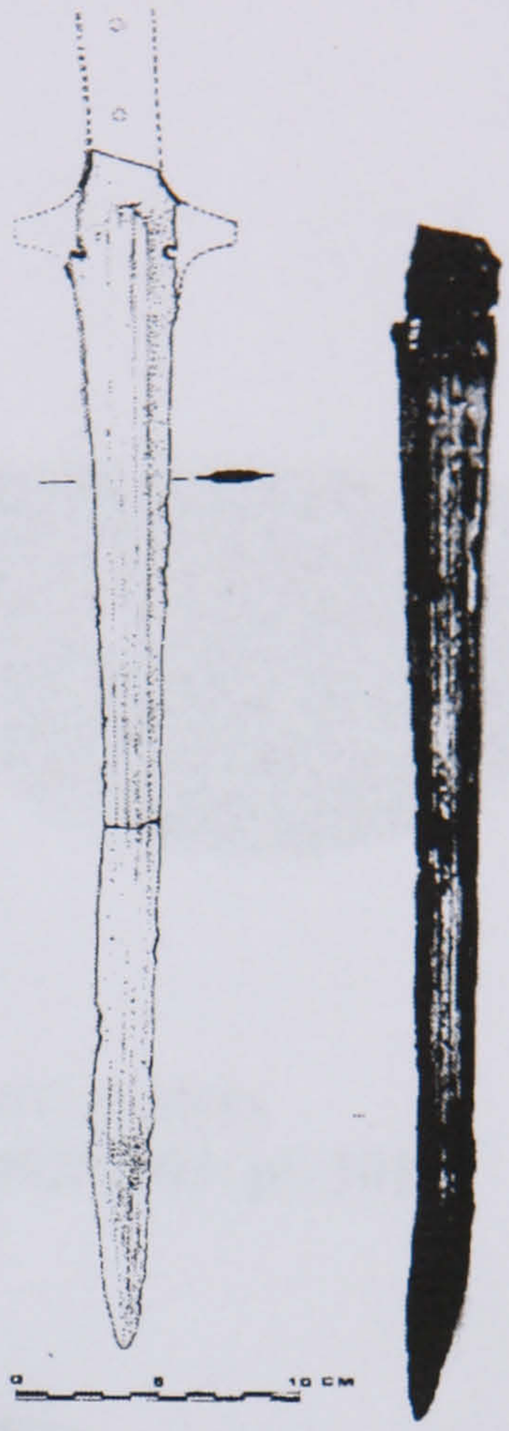


Plate 16b: Bronze sword from the
Liatovouni cemetery
(from Douzougli 1996: pl. 2α, fig. 5)

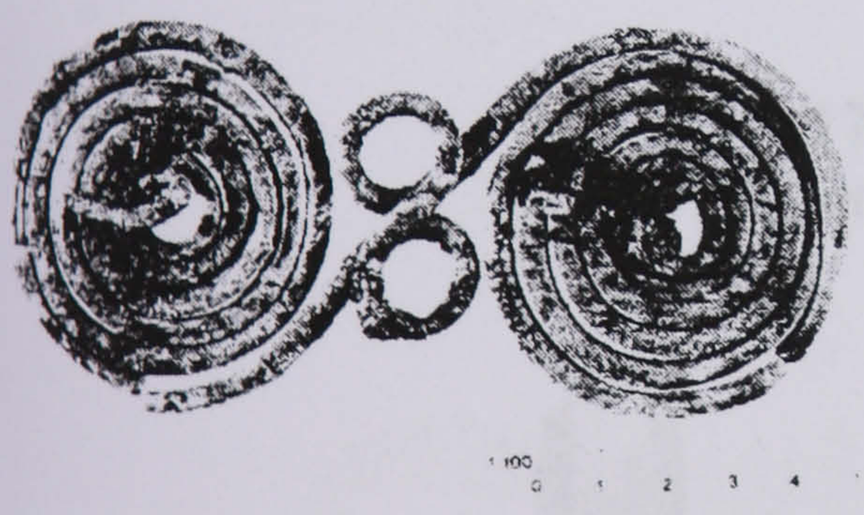


Plate 16c: Bronze spectacle-fibula
from the Liatovouni cemetery
(from Douzougli 1996: fig. 12)

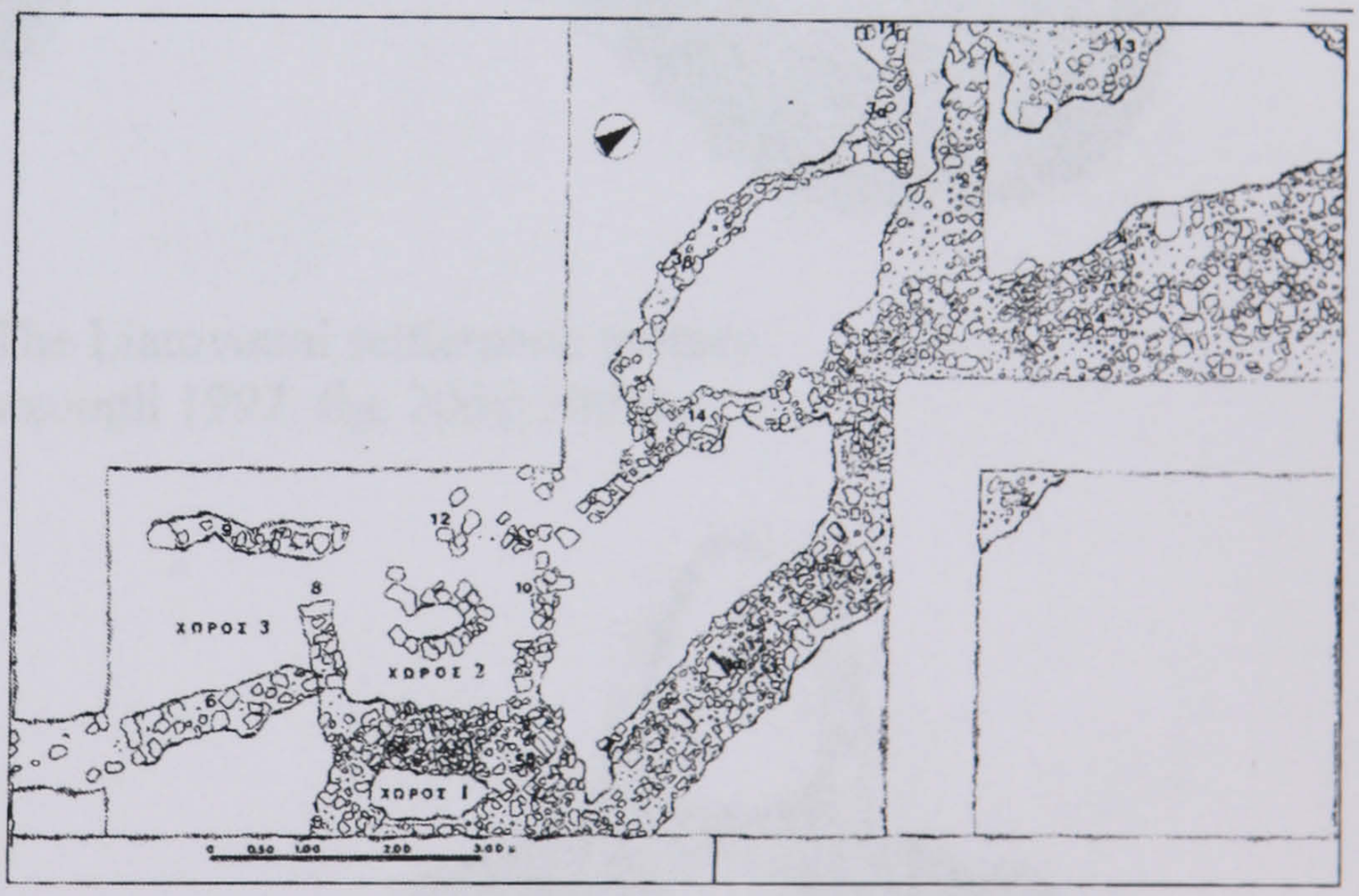


Plate 16d: The Liatovouni settlement. Plan of the excavated
part (from Douzougli 1997: plan 3)

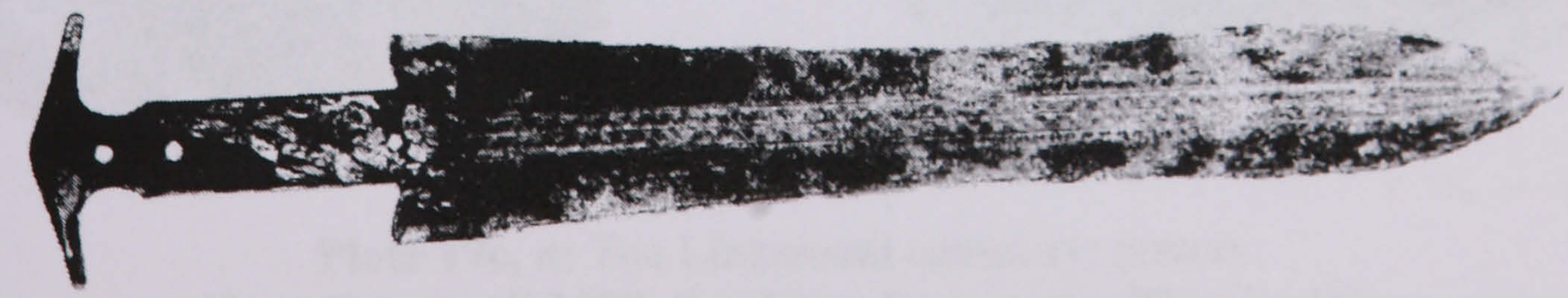


Plate 16e: Bronze sword from the Liatovouni cemetery (from Blackman 1999/2000: pl. 92)

Plate 16a-e: Finds and a plan from Liatovouni in the Konitsa district.

PLATE 17

Plate 17a, b: The Liatovouni settlement: pottery
(from Douzougli 1997: fig. 206ε; Whitley 2002/2003: pl. 101)

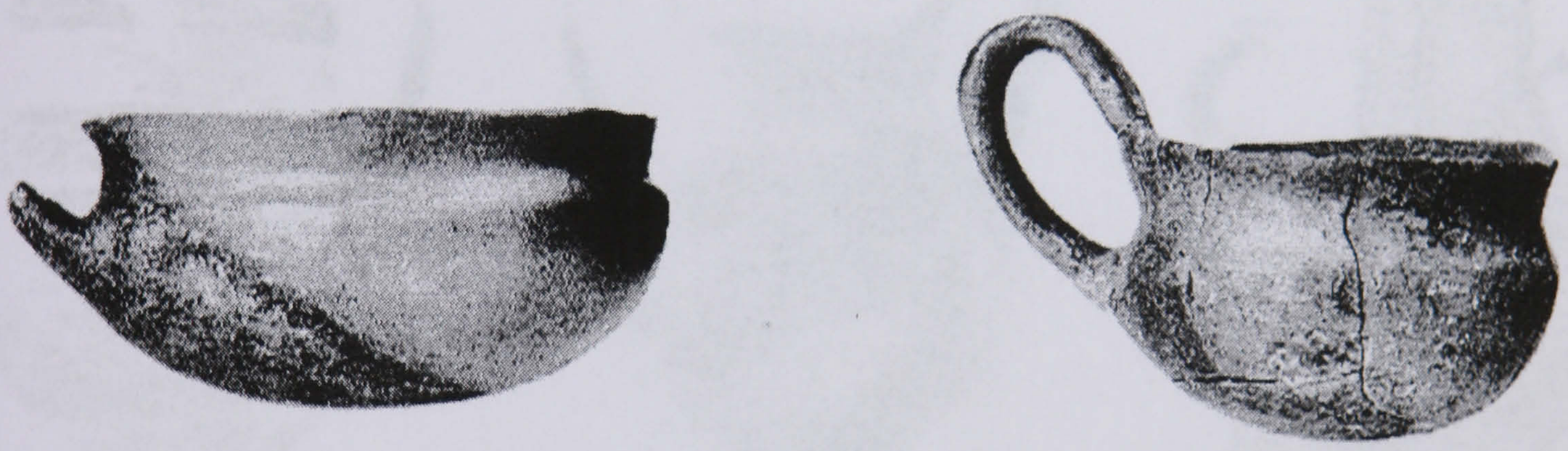


Plate 17e, f: The Liatovouni settlement: pottery
(from Douzougli 1997: fig. 206γ, 206δ)

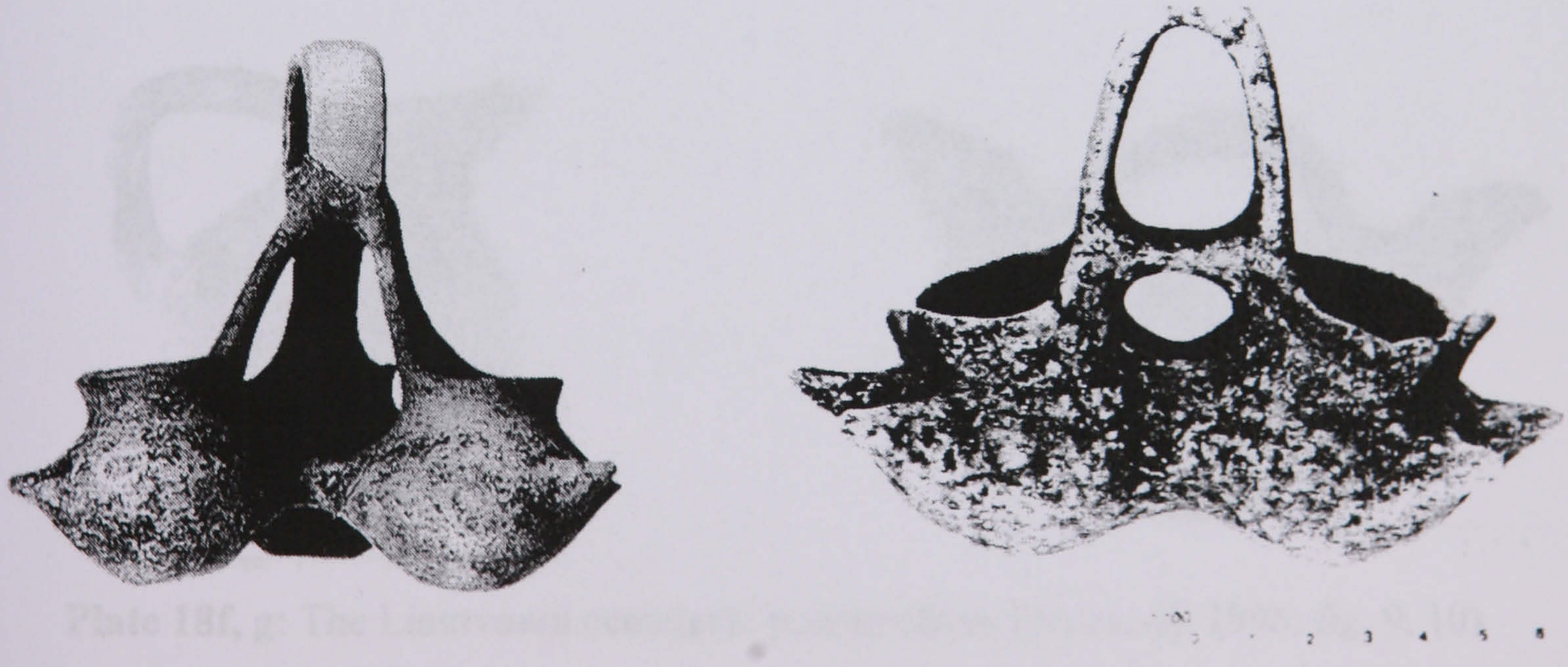


Plate 17c, d: The Liatovouni cemetery: pottery
(from Douzougli 1997: fig. 206α; Douzougli 1996: fig. 11)

Plate 17a-f: Finds from Liatovouni in the Konitsa district.

PLATE 18

Plate 18a: The Liatovouni cemetery: pottery
(from Blackman 1999/2000: pl. 93)

Plate 18b: The Liatovouni cemetery: pottery
(from Douzougli 1997: fig. 206στ)

Plate 18c, d, e: The Liatovouni cemetery: pottery (from Douzougli 1996: fig. 6, 7, 8)

Plate 18f, g: The Liatovouni cemetery: pottery (from Douzougli 1996: fig. 9, 10)

Plate 18a-g: Finds from Liatovouni in the Konitsa district.

PLATE 19

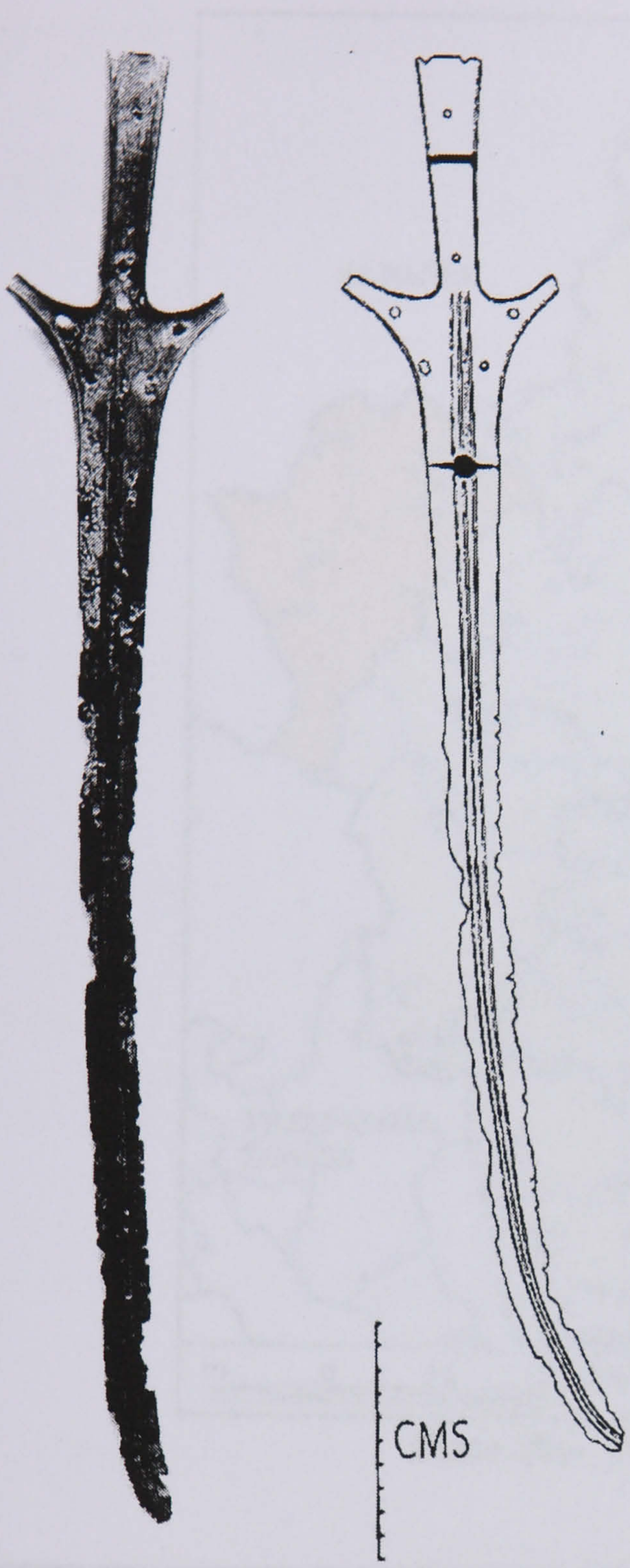


Plate 19a,b: Sword from Mesogephyra (from Soueref 2001: fig. 53:I, 22:3)

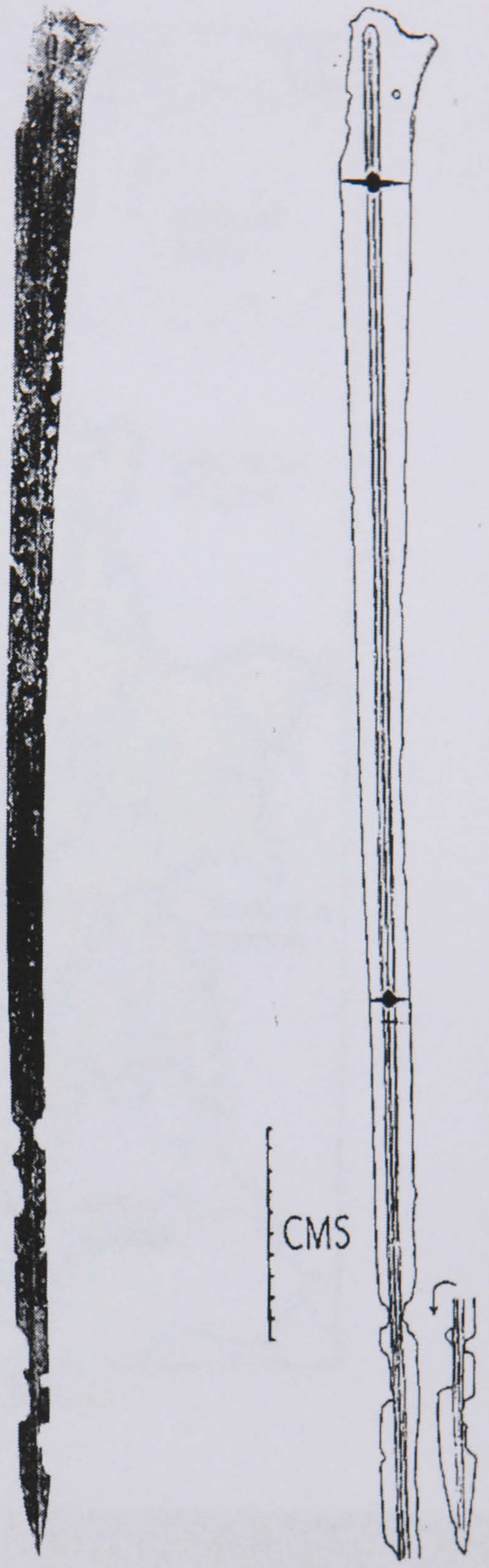


Plate 19c,d: Sword from Mesogephyra (from Soueref 2001: fig. 53:II, 22:3)

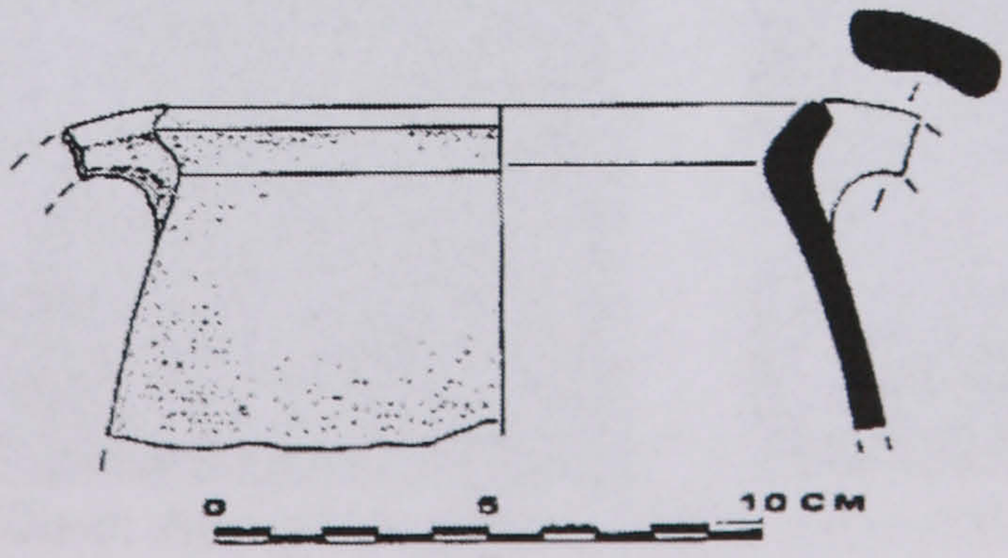


Plate 19e: Pottery from Pailaiogoritsa (from Douzougli 1996: fig. 4β)

Plate 19a-e: Finds from Mesogephyra and Palaiogoritsa in the Konitsa district.

Plate 20a: The Pogoni district

Plate 20b-c: Aerophotographs of Meropi and Paliopyrgos villages

Plate 20a-c: The Pogoni district.

PLATE 21

Plate 21a: Iron spearhead from Lachanokastro
(from Papadopoulos 1976: pl. 18: 3326)

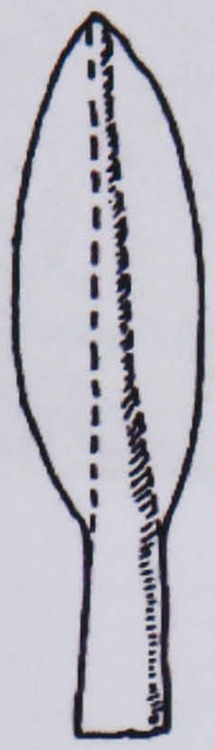


Plate 21b: Iron spearhead from
Lachanokastro
(from Hammond: 1967 fig. 23h)

Plate 21c: Bronze sword from Zeravina
(from Hammond 1967: fig. 19c)

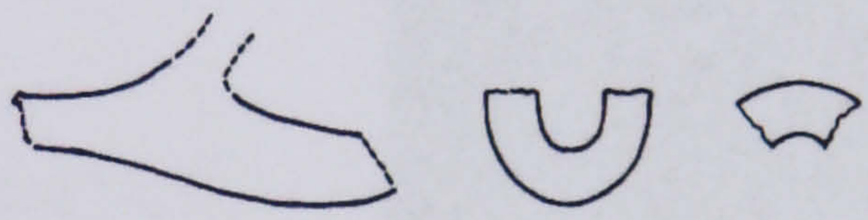


Plate 21d: Pottery from Vissani (from Hammond 1967: fig. 13:c1-c3)

Plate 21e: Weapons and sherds from Vissani (from Hammond 1967: pl. XXIc)

Plate 21a-e: Finds from Lachanokastro, Vissani and Zeravina in Pogoni district.

PLATE 22

Plate 22a: Tumulus in koilada Gormou (south-east side)
(from Hammond 1997b: pl. 30)

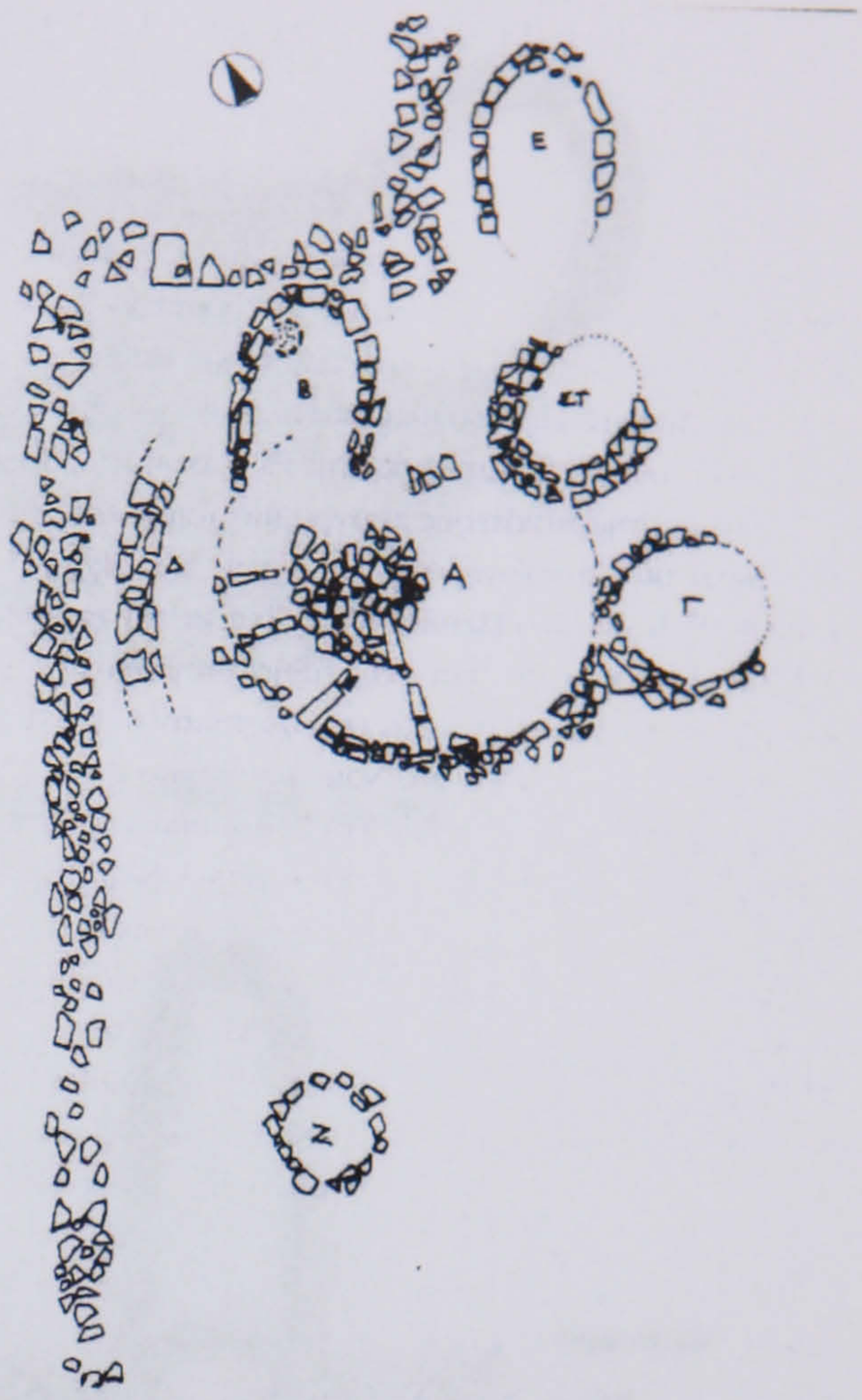


Plate 22b: Bulding foundations from
Glava Kato Meropis
(from Andreou 1997: fig. 1)

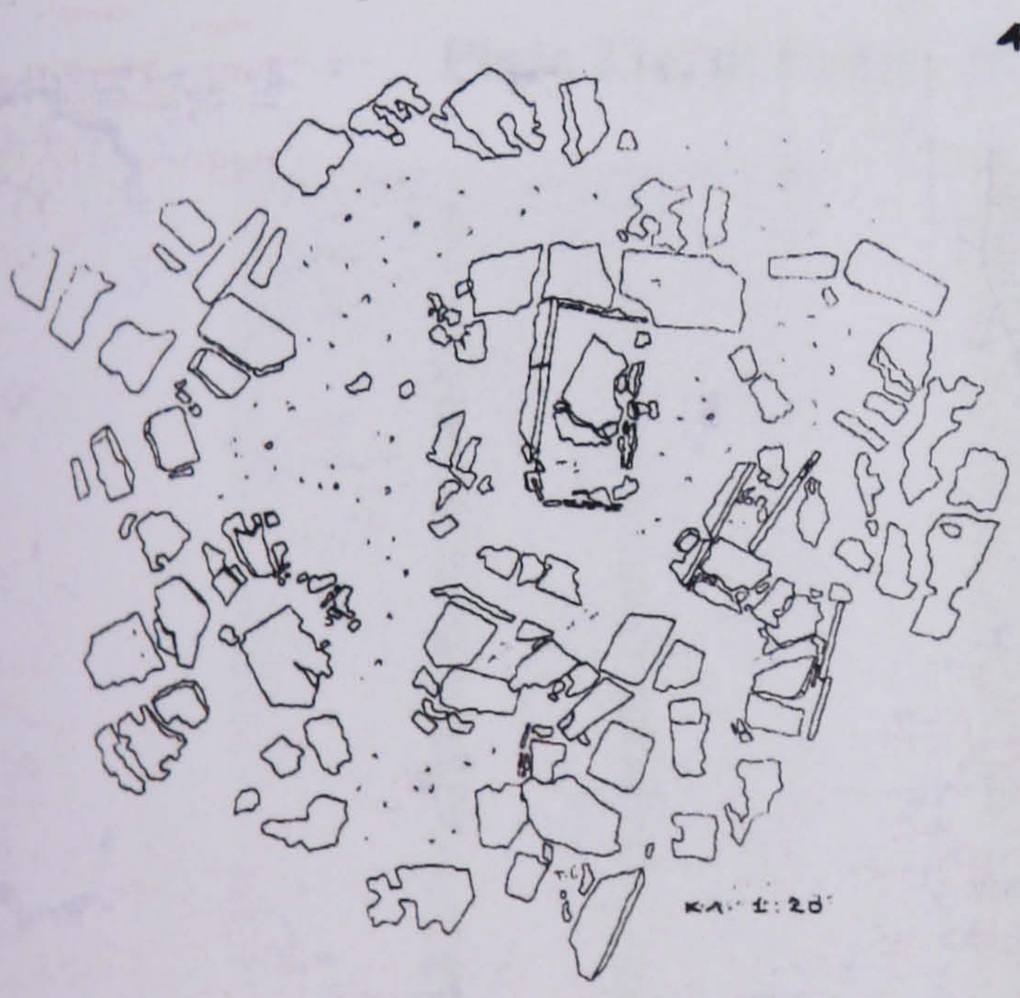


Plate 22c: Tumulus from Kato Meropi
(from Andreou 1994: plan 4)

Plate 22d: Bulding foundations and ceramics in situ
from Anemomylos Meropis
(from Andreou 1997: pl. 205γ)

Plate 22a-d: Tumuli and architectural remains from Meropi in Pogoni district.

PLATE 23

Plate 23a, b: Pottery from Meropi (from Andreou, 1994: pl. 3, 4)

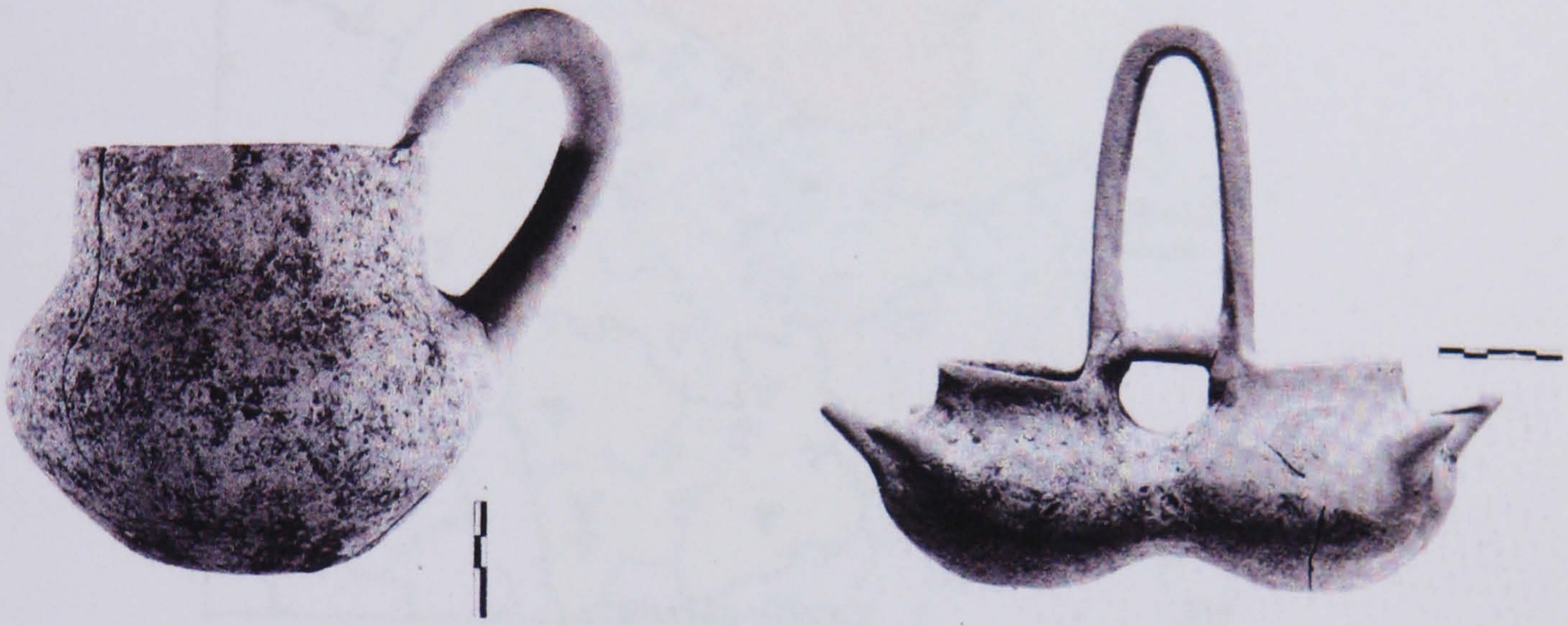


Plate 23c, d: Pottery from Meropi (from Andreou 1994: pl. 6, 8)

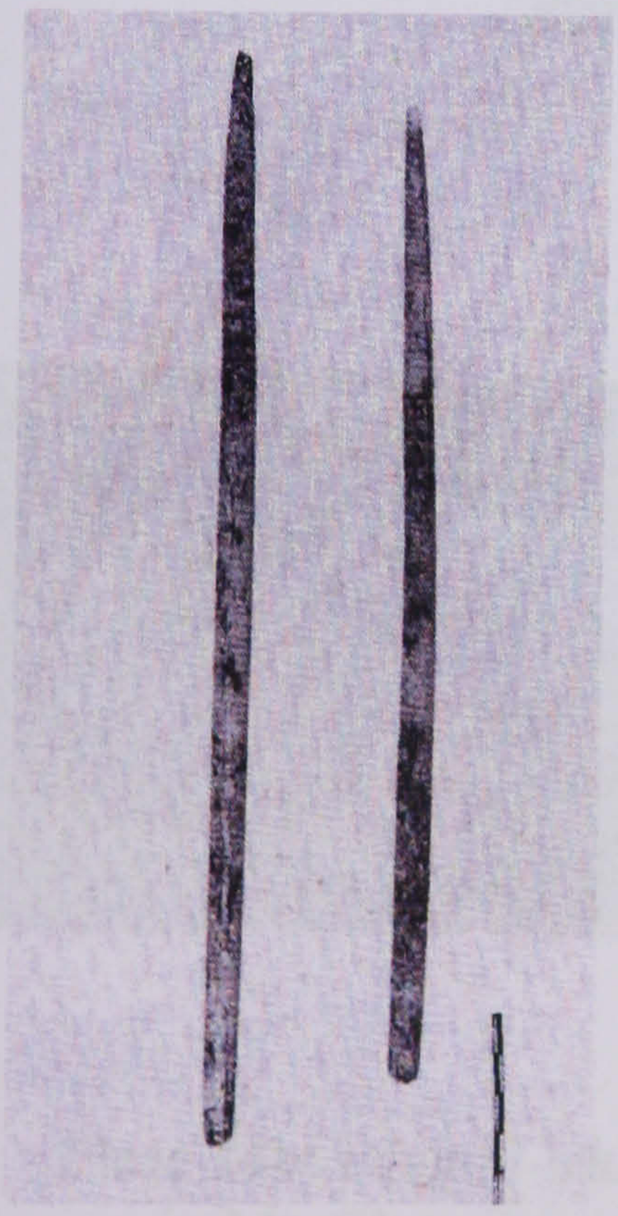


Plate 23e: Pins made of bone from Meropi (from Andreou, 1994: pl. 7)

Plate 23f: Rings from Meropi (from Hammond 1997b: pl. 26)

Plate 23g: Pottery from Meropi (from Andreou, 1994: pl. 9)

Plate 23a-g: Finds from Meropi in Pogoni district.

Plate 24a: The Zagori-Kalpaki district

Plate 24b: Dragon-lake in Mt. Gkamila (Nitsiakos & Arapoglou 2001: 13)

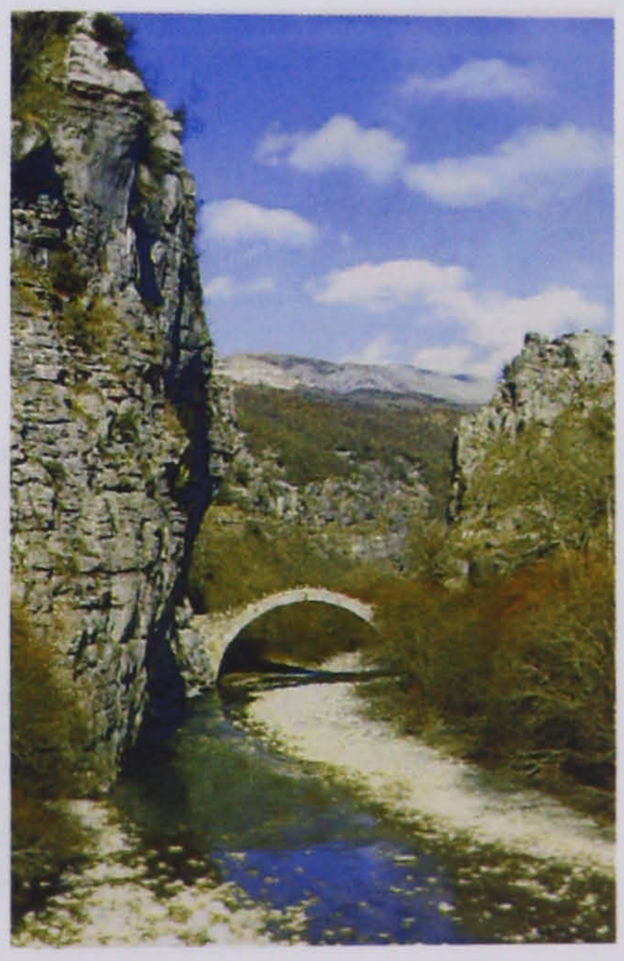


Plate 24c: Zagori Bridge (Nitsiakos et al. 1998: 480)

Plate 24d: The Vikos gorge and Voidomates river (Christou 2003: p.196)

Plate 24a-d: The Zagori-Kalpaki district.

PLATE 25

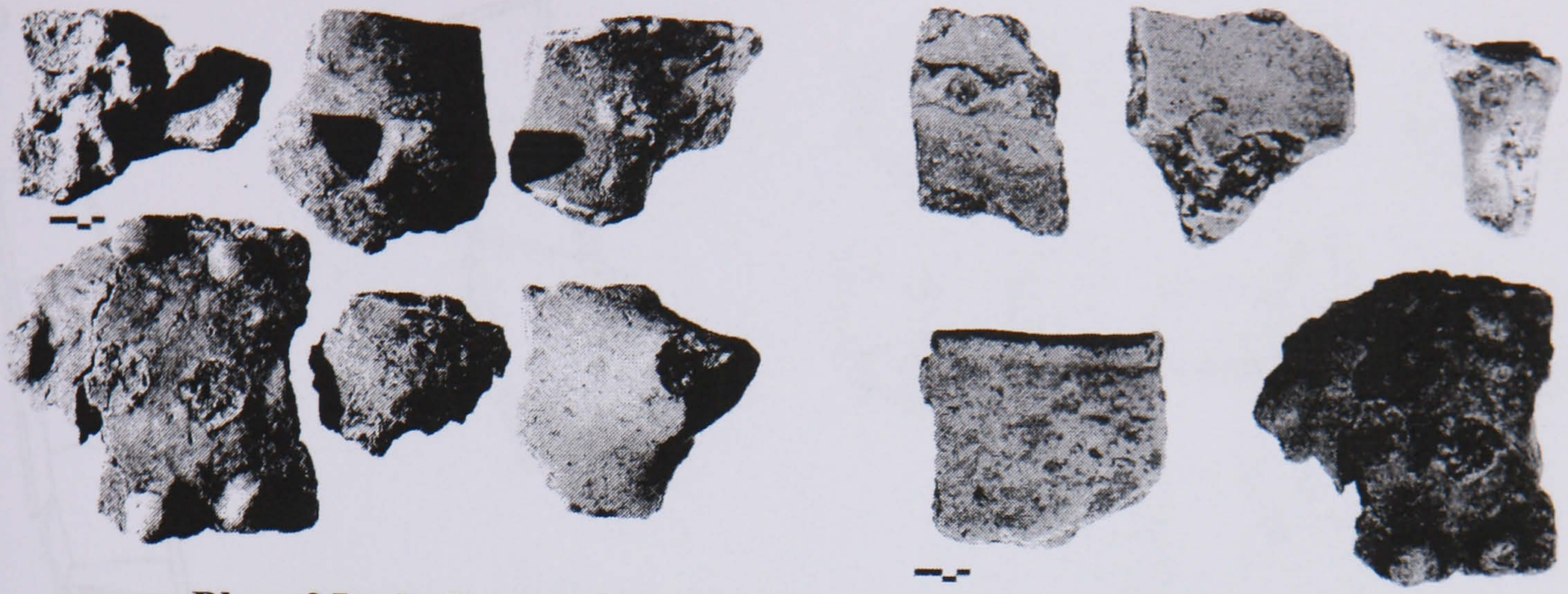


Plate 25a, b: Pottery from Aristi (from Andreou 1994: pl. 15, 16)

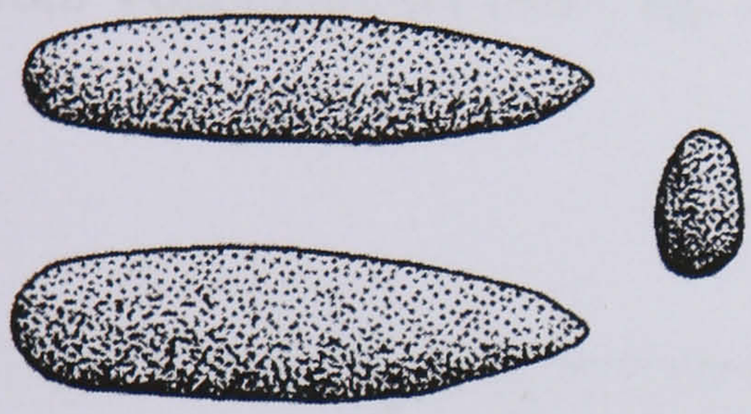


Plate 25c: Celts from Greveniti [1:4]
(horizontal, vertical, cross-section,)
(from Hammond 1967: fig. 18:2a, b, c)

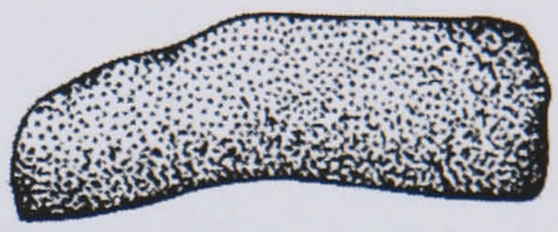


Plate 25d: Celt from Aristi [1:4]
(vertical section)
(from Hammond 1967: fig. 18: 5)

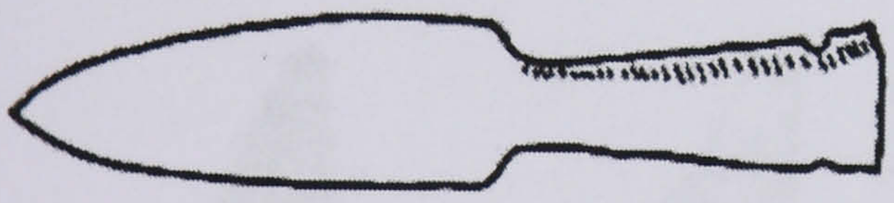


Plate 25e: Bronze spear-head from
Kakousioi (from Hammond 1967: fig. 23j)

Plate 25f: Bronze spear-head from Kato
Pedina (from Andreou 1994: pl. 19)

Plate 25g: Whole kantharos from Kato Pedina
(from Andreou 1994: pl. 18)

Plate 25a-g: Finds from Aristi, Greveniti, Kakousioi and Kato Pedina in the Zagori – Kalpaki district.

PLATE 26

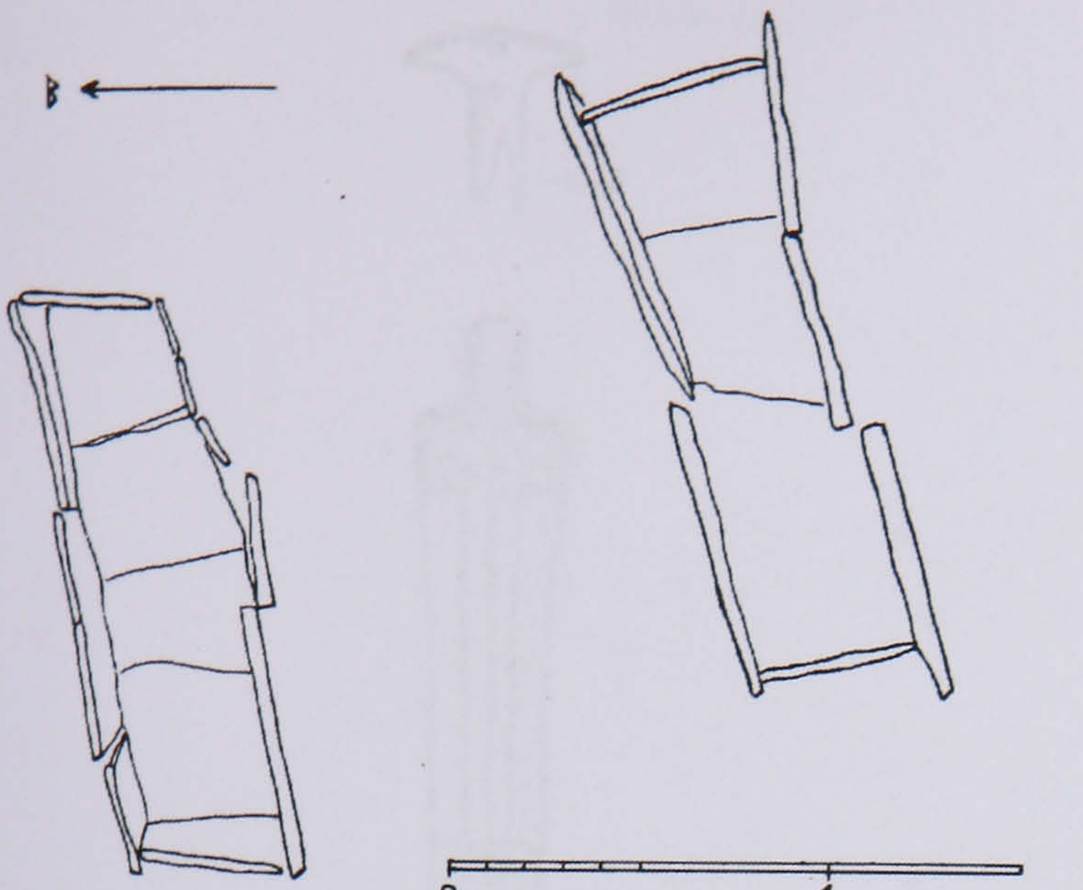


Plate 26a: Graves from Elaphotopos (from Vokotopoulou 1967: fig. 1)

Plate 26b: Pottery from Elaphotopos (from Wardle 1977: fig. 12: 580-586)

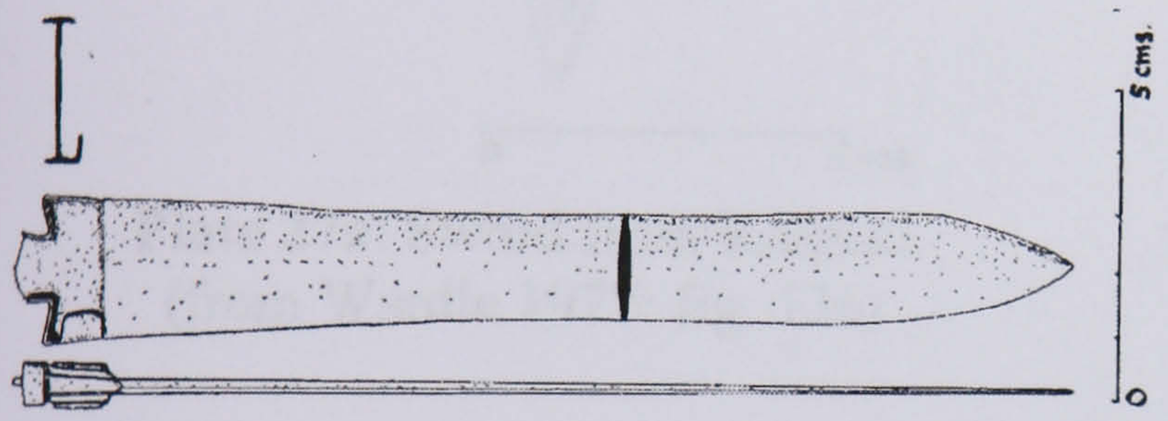


Plate 26c: The sword from Kalyvia Elaphotopou (from Wardle 1977: fig. 13b)

Plate 26d: The sword from Kalyvia Elaphotopou (from Soueref 2001: pl. 52III)

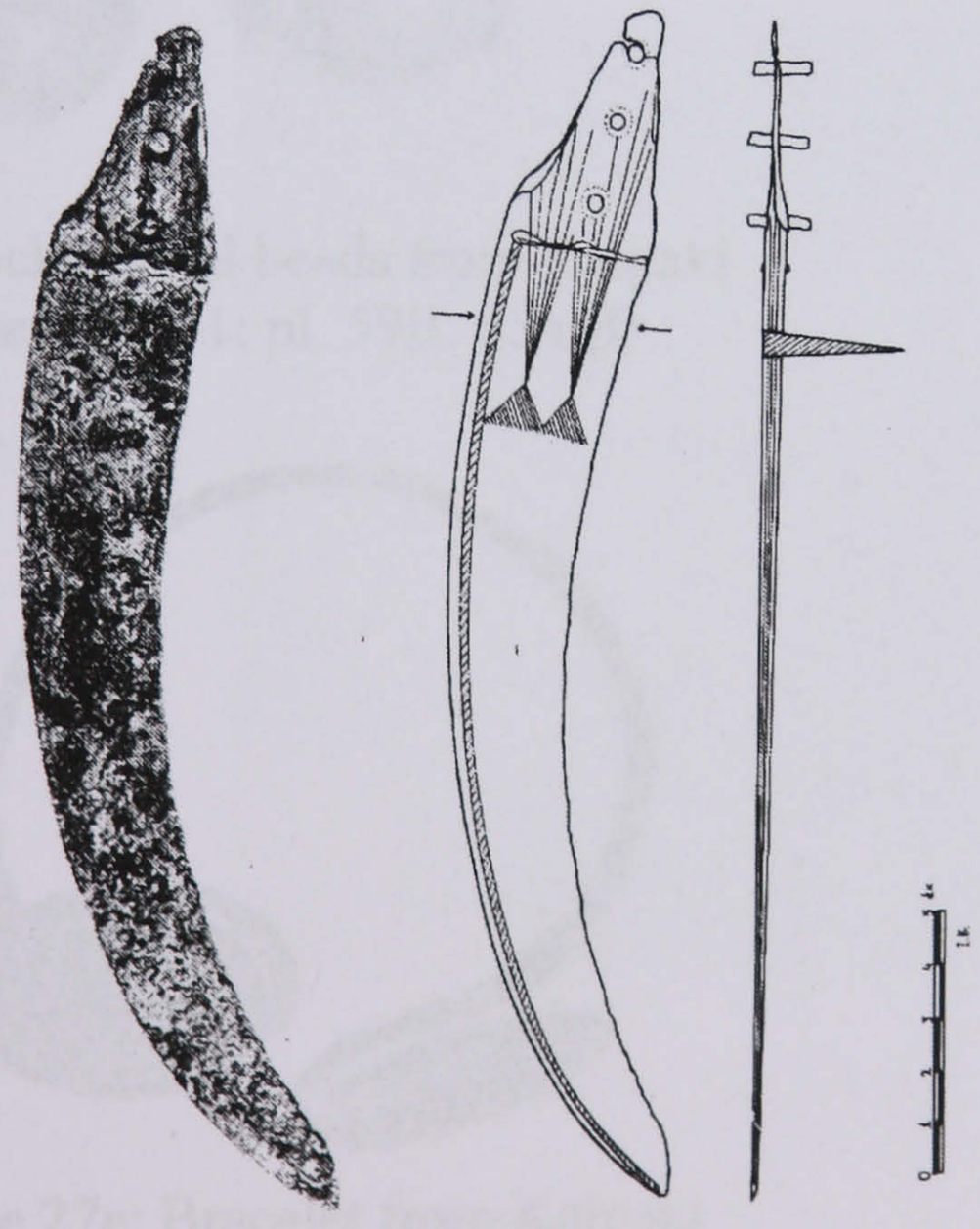


Plate 26e: Knife from Elaphotopos (from Soueref 2001: pl 51α, Vokotopoulou 1967: fig. 1)

Plate 26f: Chalcedony beads from Elaphotopos (from Papadopoulos 1976: pl. 8: 3301)

Plate 26a-f: Finds from Elaphotopos in the Zagori – Kalpaki district.

PLATE 27

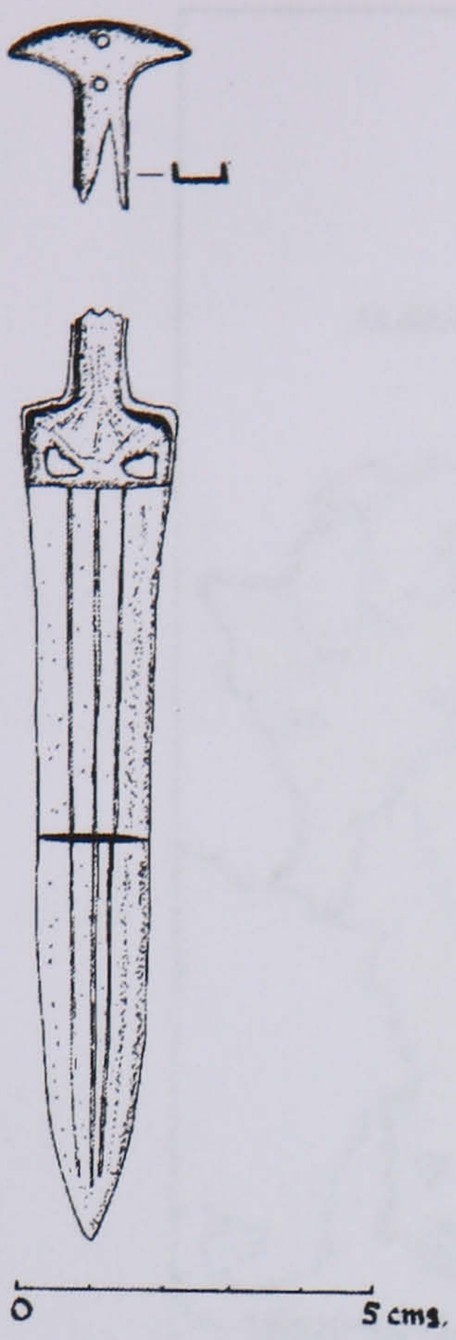


Plate 27a: Sword from Kalpaki
(from Wardle 1977: fig. 13a)

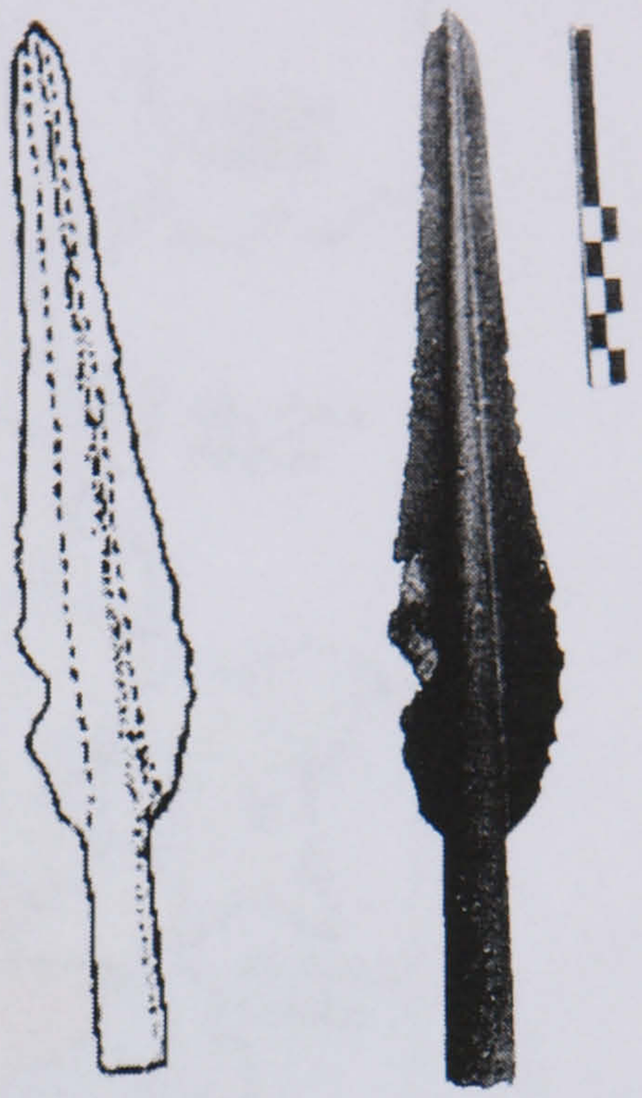


Plate 27b: Bronze spear-head from Kalpaki
(from Soueref 2001: fig.24I:g, pl. 55b)

Plate 27c: Rock crystal beads from Kalpaki
(from Soueref 2001: pl. 59II: 65α-β)

Plate 27d: Tweezers from Kalpaki
(from Papadopoulos 1976: pl. 5 β: 63α-β)

Plate 27e: Bracelet from Kalpaki
(from Papadopoulos 1976: pl. 6: 61)

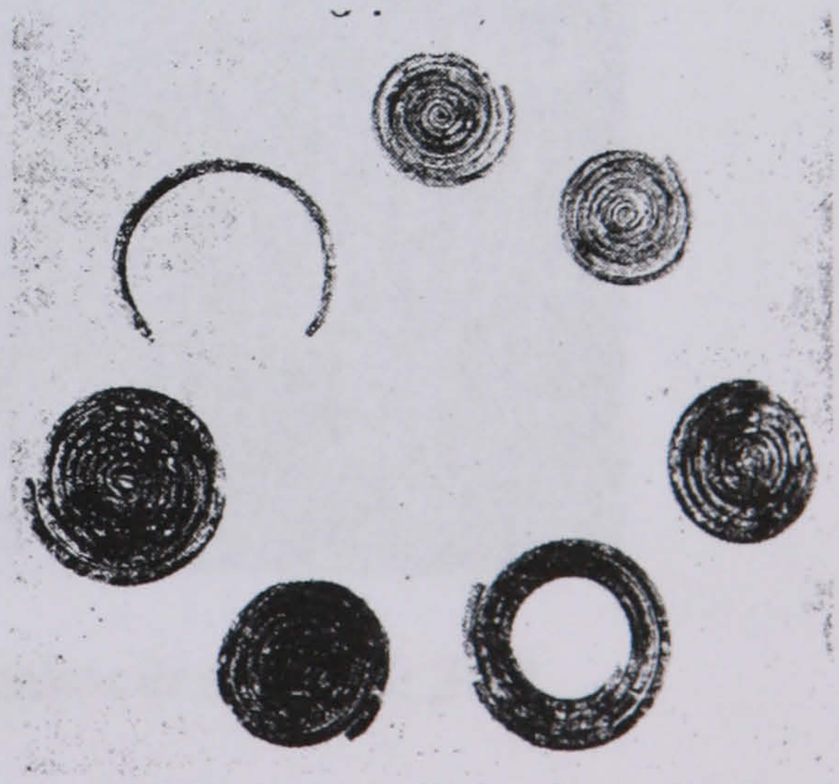


Plate 27f: Spiral disks from Kalpaki
(from Papadopoulos 1976: pl. 6: 62)

Plate 27a-f: Finds from Kalpaki in the Zagori – Kalpaki district.

Plate 28a: The Ioannina-Dodoni district

Plate 28b: Mt. Tomaros (Nitsiakos et al. 1998: 294)

Plate 28a-b: The Ioannina - Dodoni district.

PLATE 29

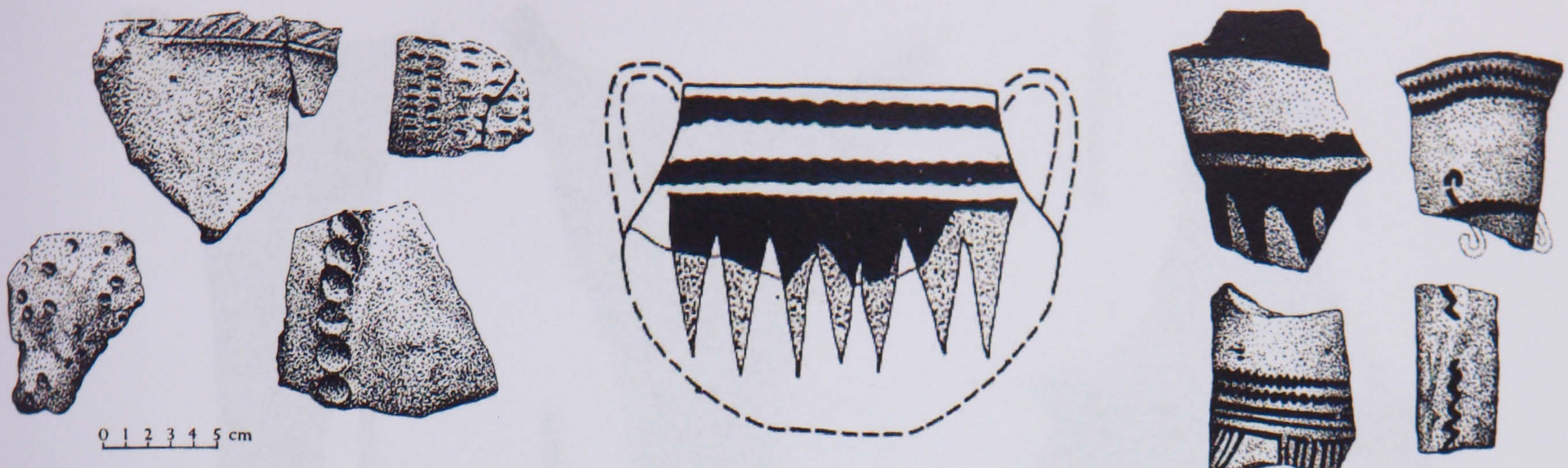


Plate 29a-c: Pottery from Kastritsa (from Hammond 1967: fig. 7, 10k, 8)

Plate 29d-f: Pottery from Kastritsa (from Soueref 2001: pl. 47II, 48II, 41II)

Plate 29g-i: Handmade pottery from Kastritsa (from Soueref 2001: pl. 46II, 38II, 38I)

Plate 29a-i: Finds from Kastritsa in Ioannina-Dodoni district.

PLATE 30

Plate 30a-c: Pottery from Kastritsa (from Soueref 2001: pl. 40II, 40I, 39I)

Plate 30d: Pottery from Kastritsa (from Soueref 2001: pl. 39II)

Plate 30e: pottery from Kastritsa (from Soueref 2001: pl. 46I)

Plate 30f: Pottery from Kastritsa (from Hammond 1997b: pl. 19)

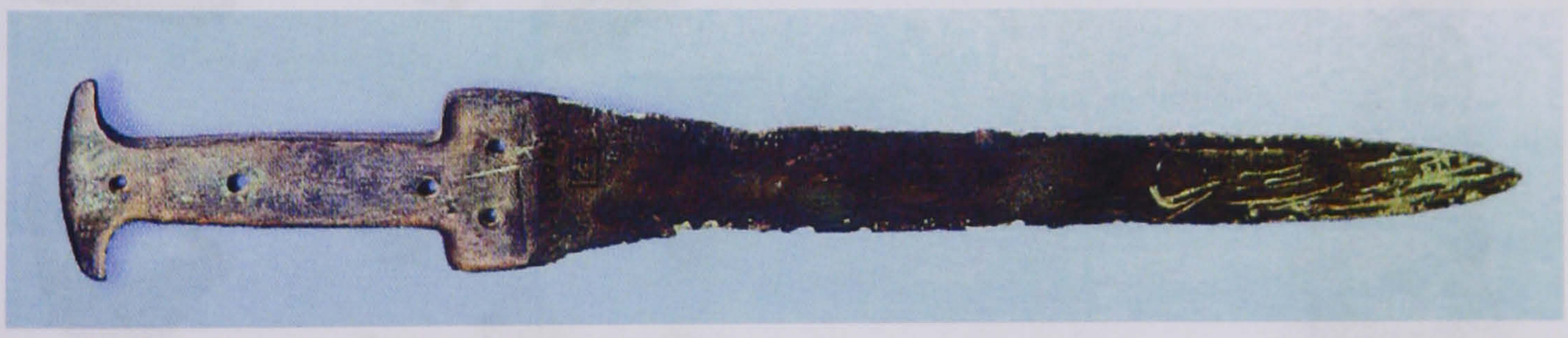


Plate 30g: Sword from Kastritsa (from Hammond 1997b: pl. 22 and Soueref 2001: fig. 19α)

Plate 30a-g: Finds from Kastritsa in Ioannina-Dodoni district.

PLATE 31

Plate 31a-b: Pottery from Krya (from Andreou 1994: pl. 20, 21)

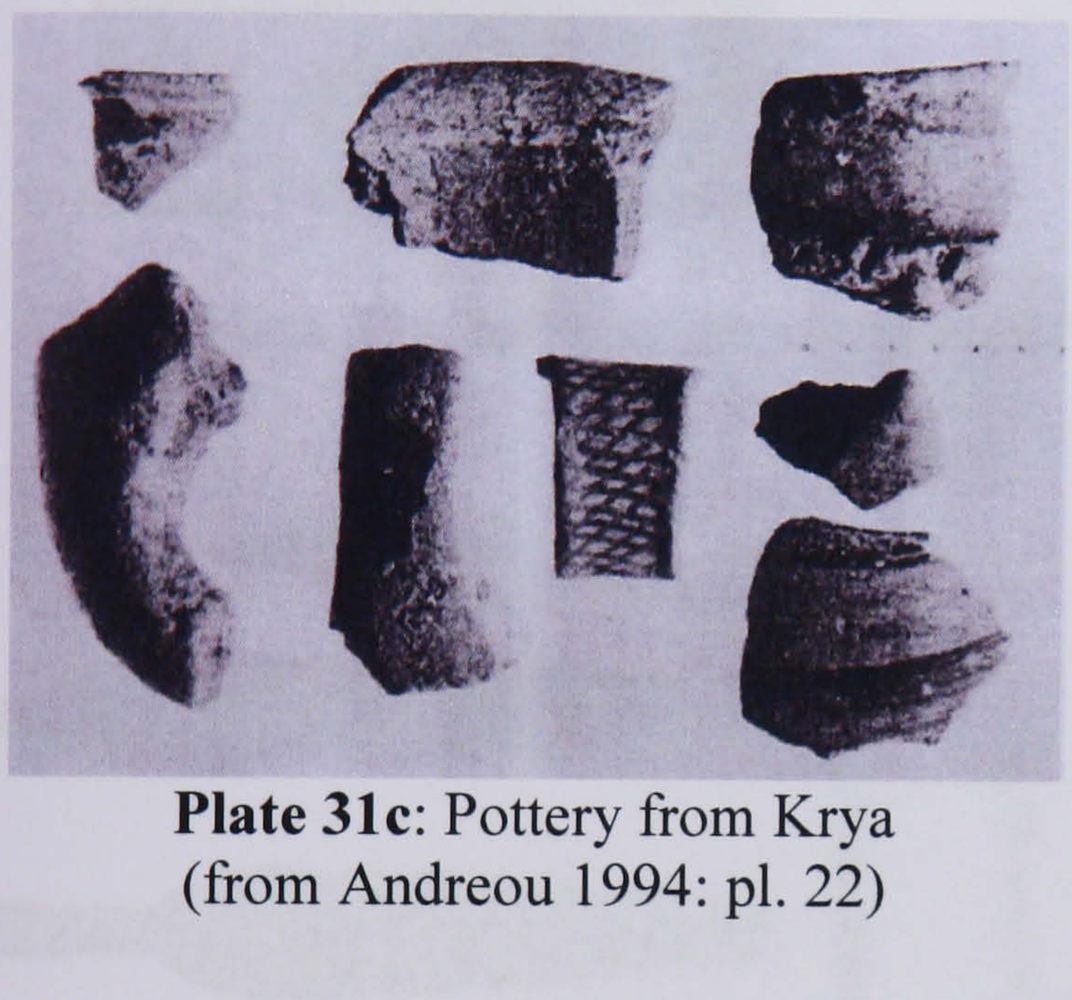


Plate 31c: Pottery from Krya
(from Andreou 1994: pl. 22)

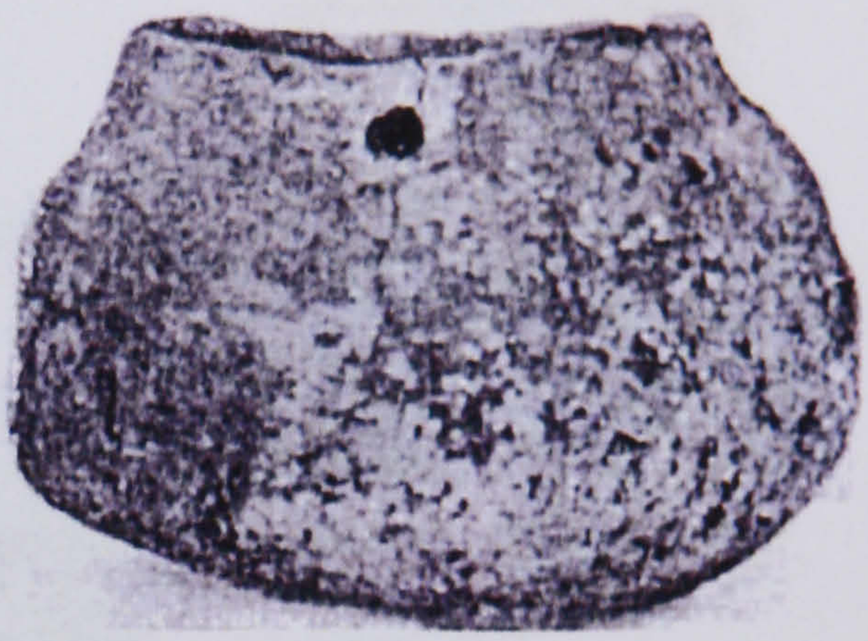


Plate 31d: Pottery from Neochoropoulo
(from Soueref 2001: 49III)

Plate 31e: Pottery from Koutselio
(from Hammond 1967: fig. 14)

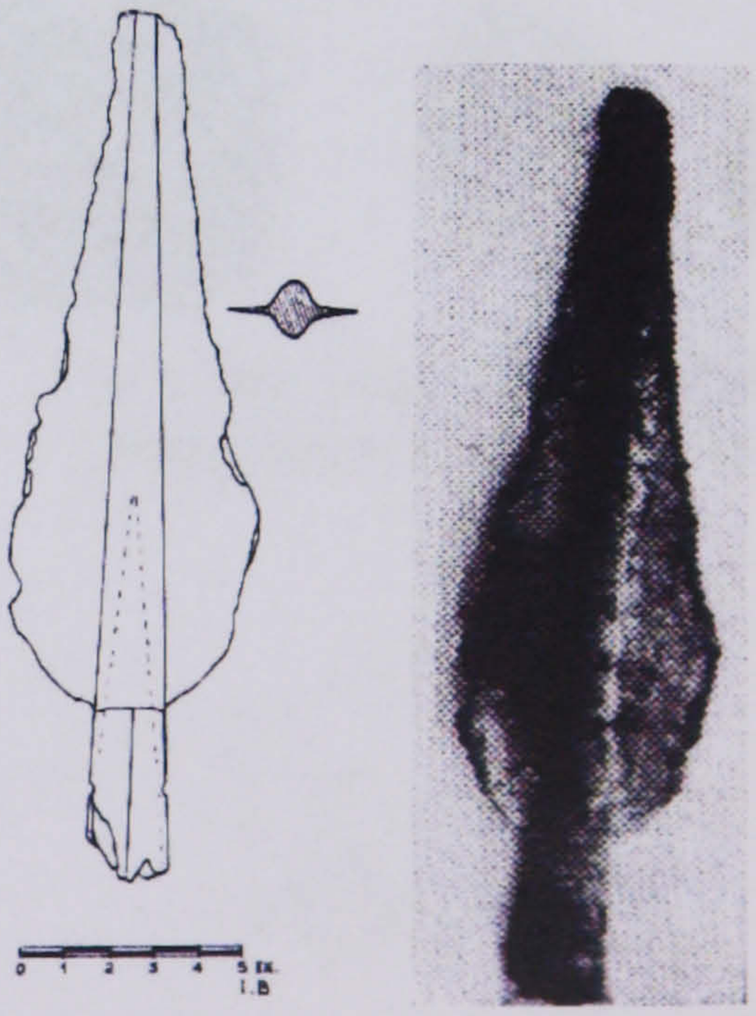
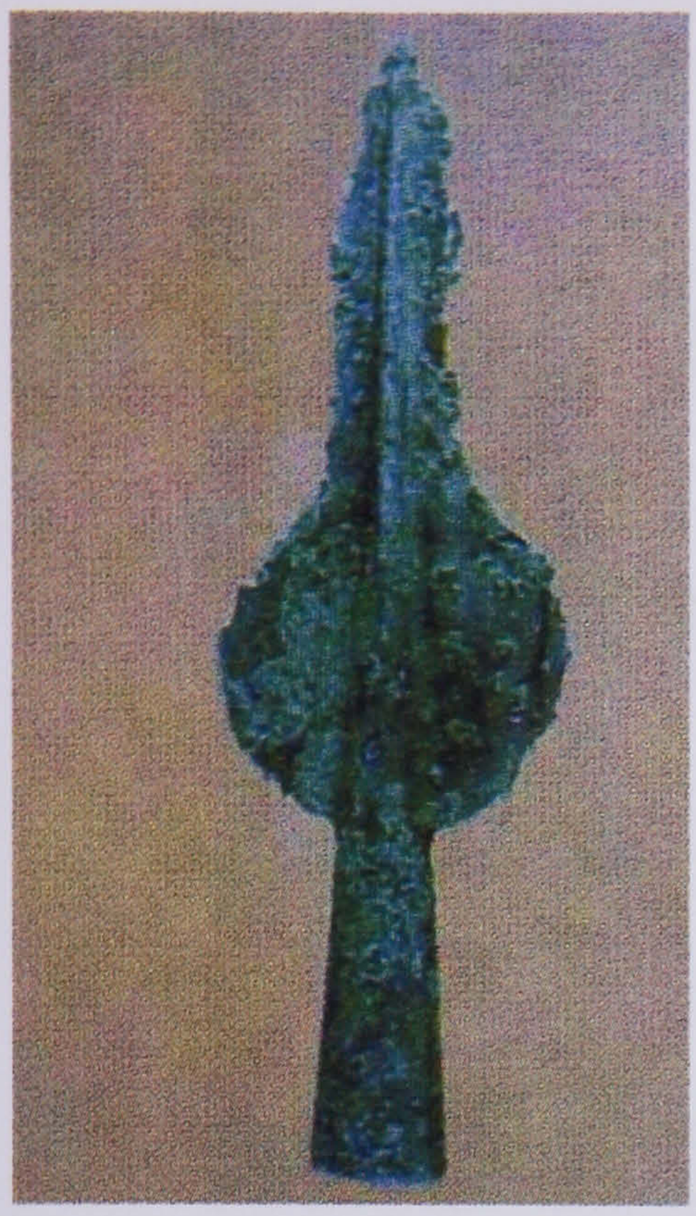


Plate 31f: Spear-head from Passarona/
Gardiki (from Vokotopoulou 1969: fig. 7ε
and from Papadopoulos 1976: pl.20: 3328)

Plate 31a-f: Finds from Krya, Neochoropoulo, Koutselio and Passarona/ Gardiki in Ioannina-Dodoni district.

PLATE 32



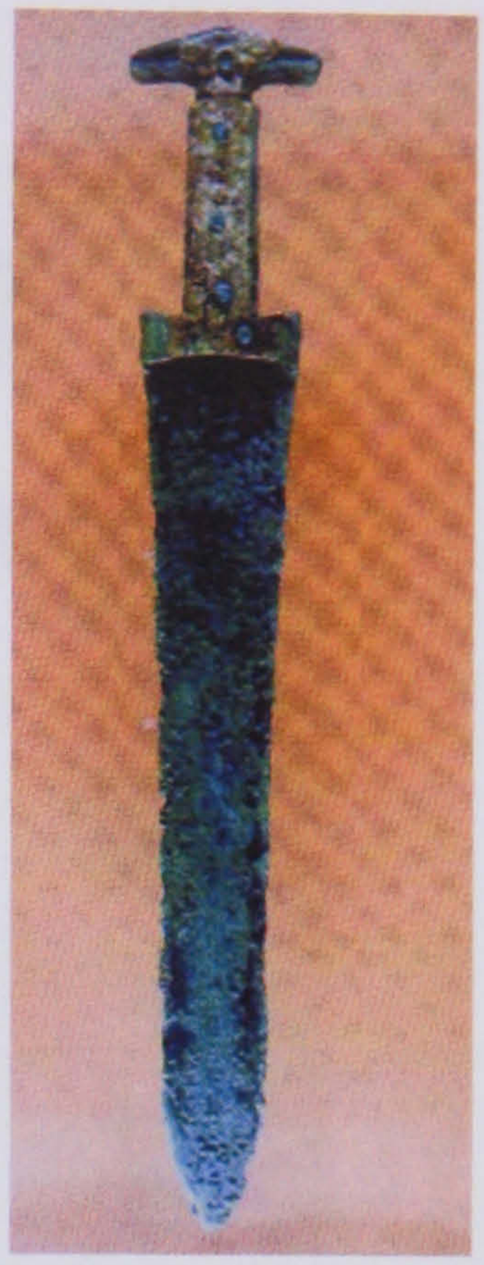


Plate 32a, b: Spear-head and sword from Pedini (from Masouridi 2001: 7)

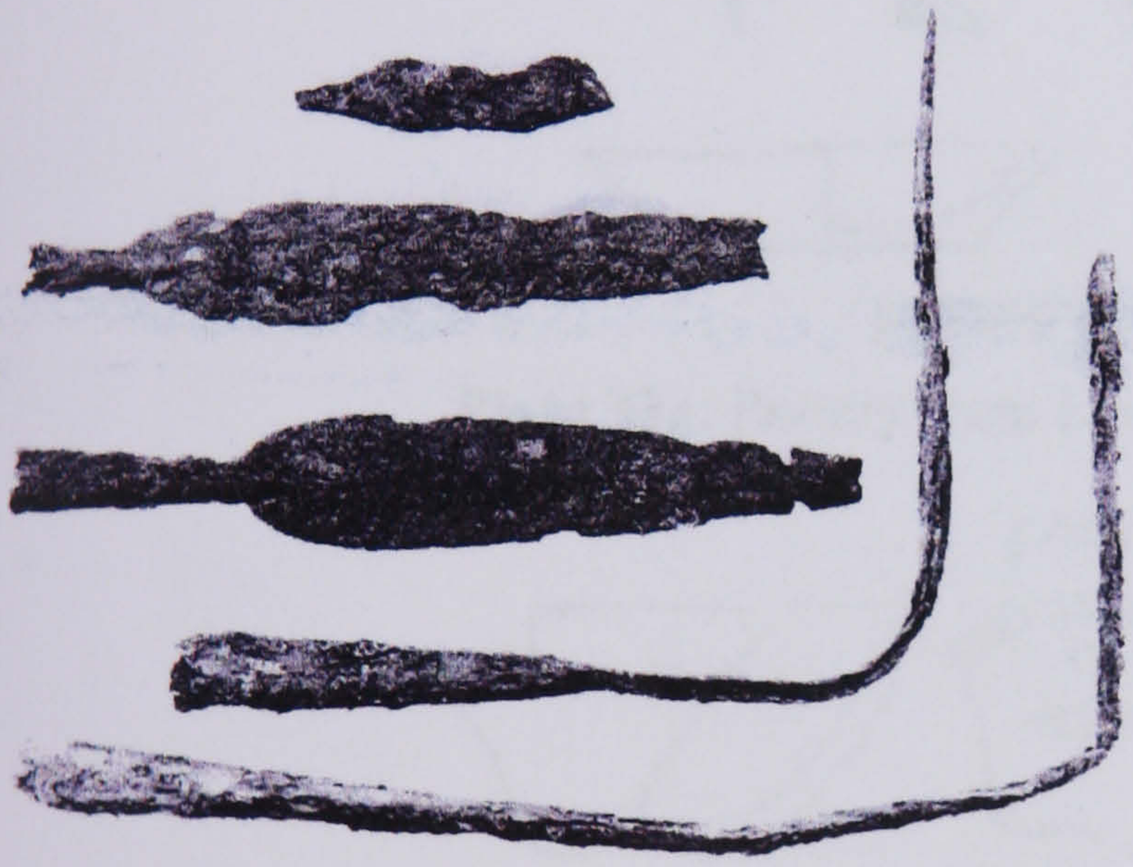


Plate 32c: Spearheads and parts of iron knife from Perama (from Andreou 1994: fig. 24)

Plate 32d: Pottery from Perama (from Andreou 1994: pl. 25)

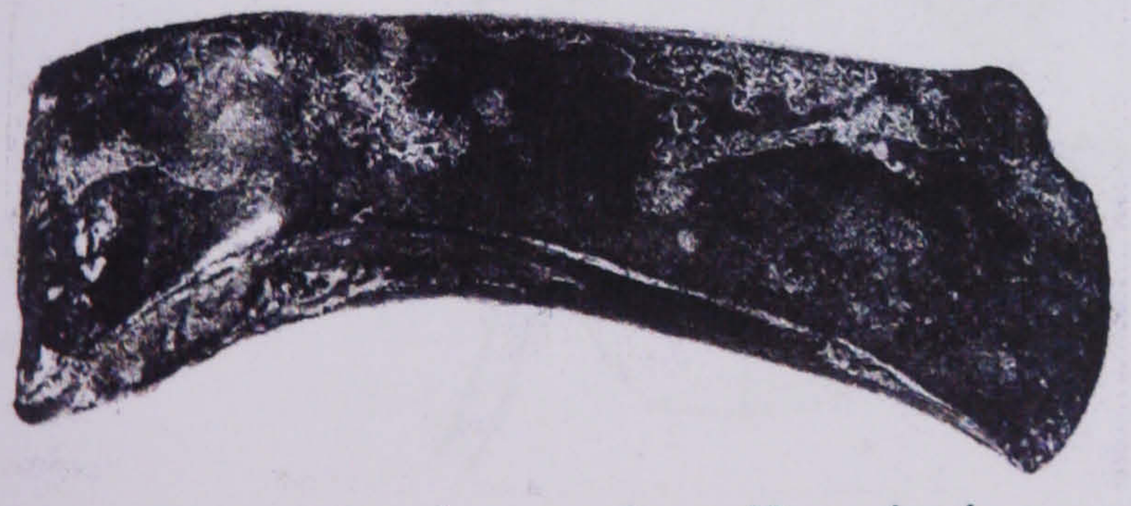


Plate 32e: the axe from Tsergiani (from Papadopoulos 1976: pl. 12:114)

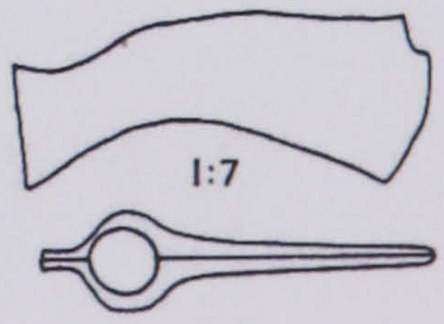


Plate 32f: the axe from Tsergiani (from Hammond 1967: fig. 22:b1)

Plate 32a-f: Finds from Pedini, Perama and Tsergiani in Ioannina-Dodoni district.

Plate 33a: Pottery from Dodoni (from Wardle 1977: fig. 10)

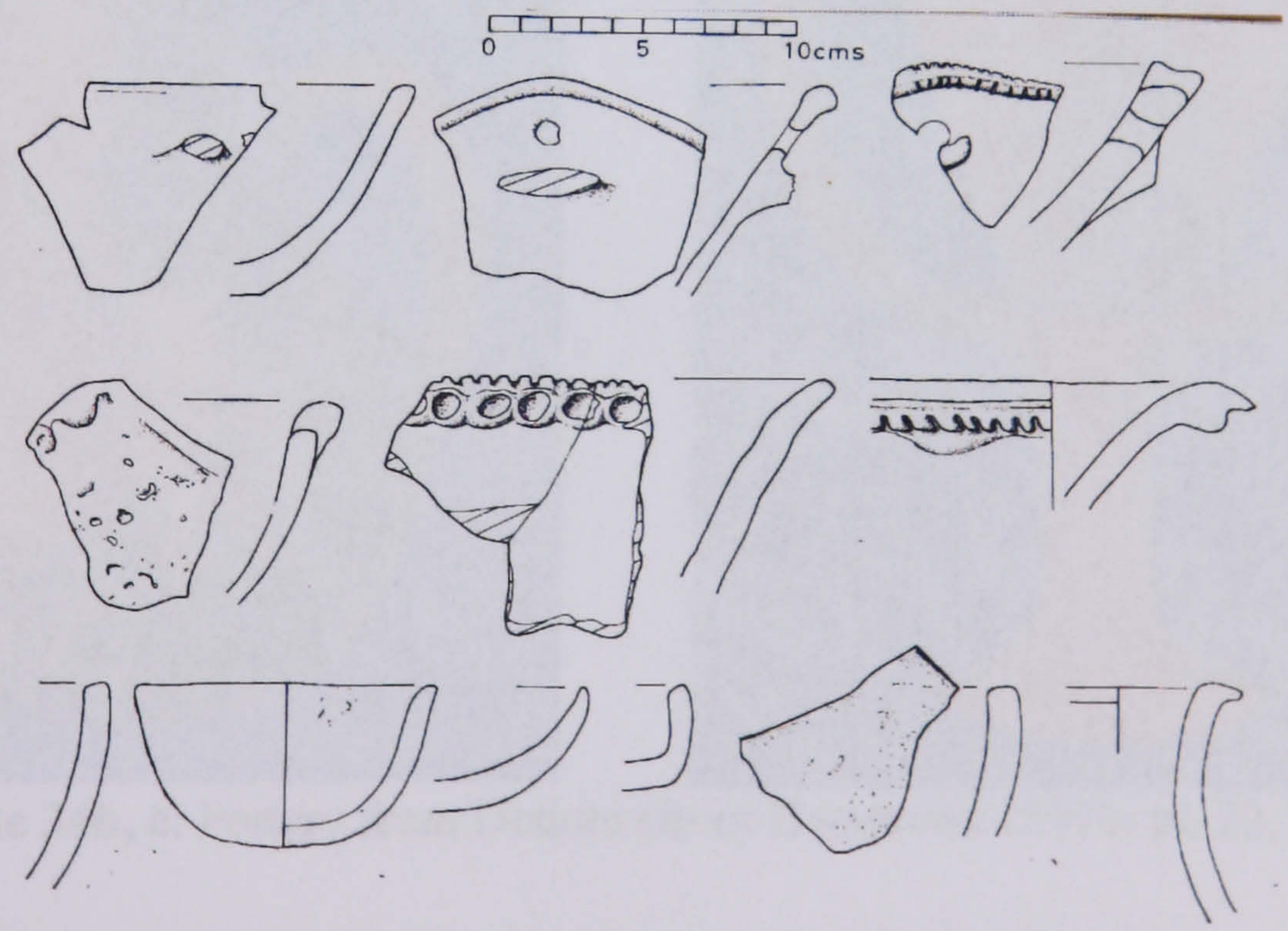


Plate 33b: Pottery from Dodoni (from Wardle 1977: fig. 11)

Plate 33a-b: Finds from Dodoni in Ioannina-Dodoni district.

PLATE 34

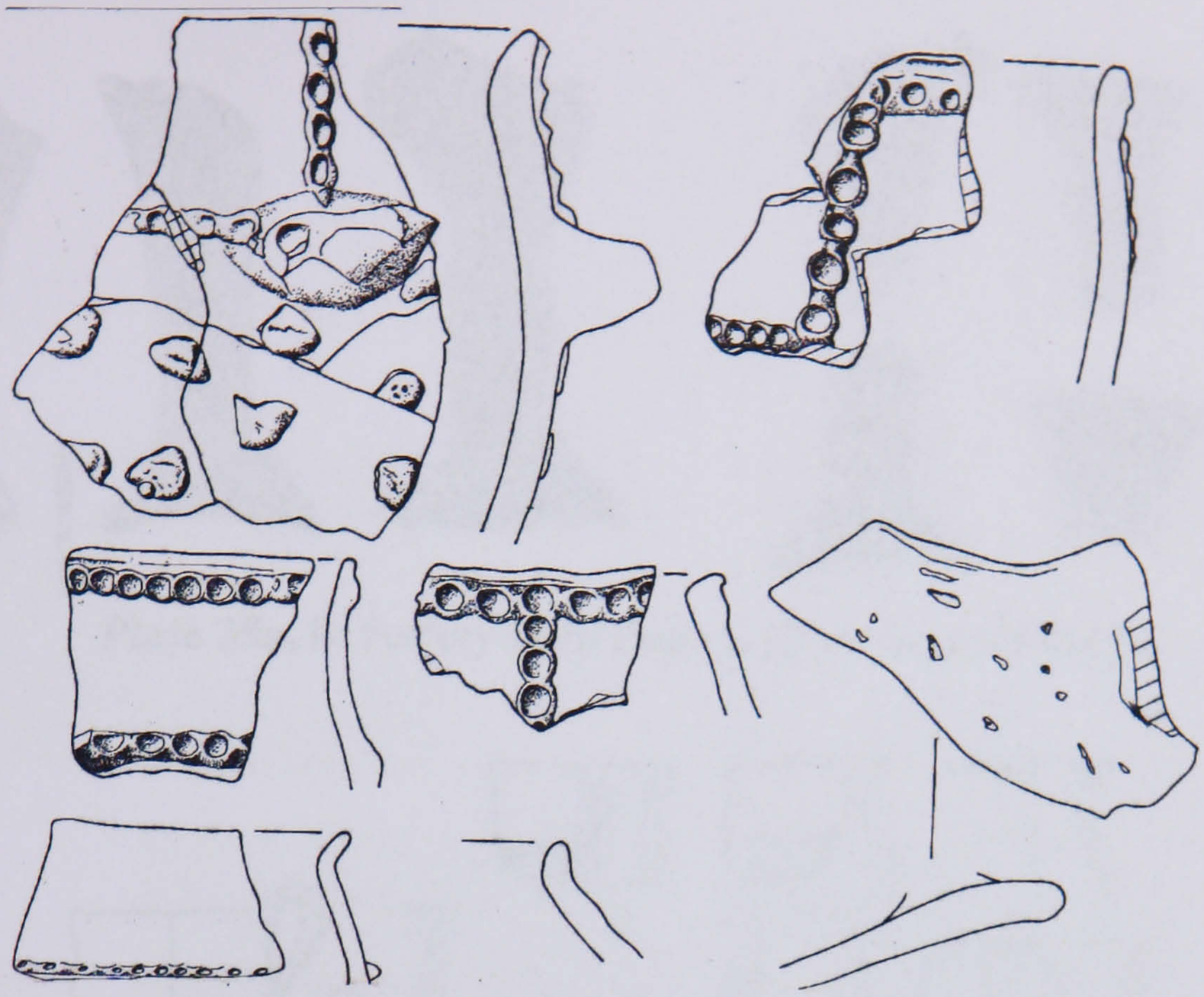
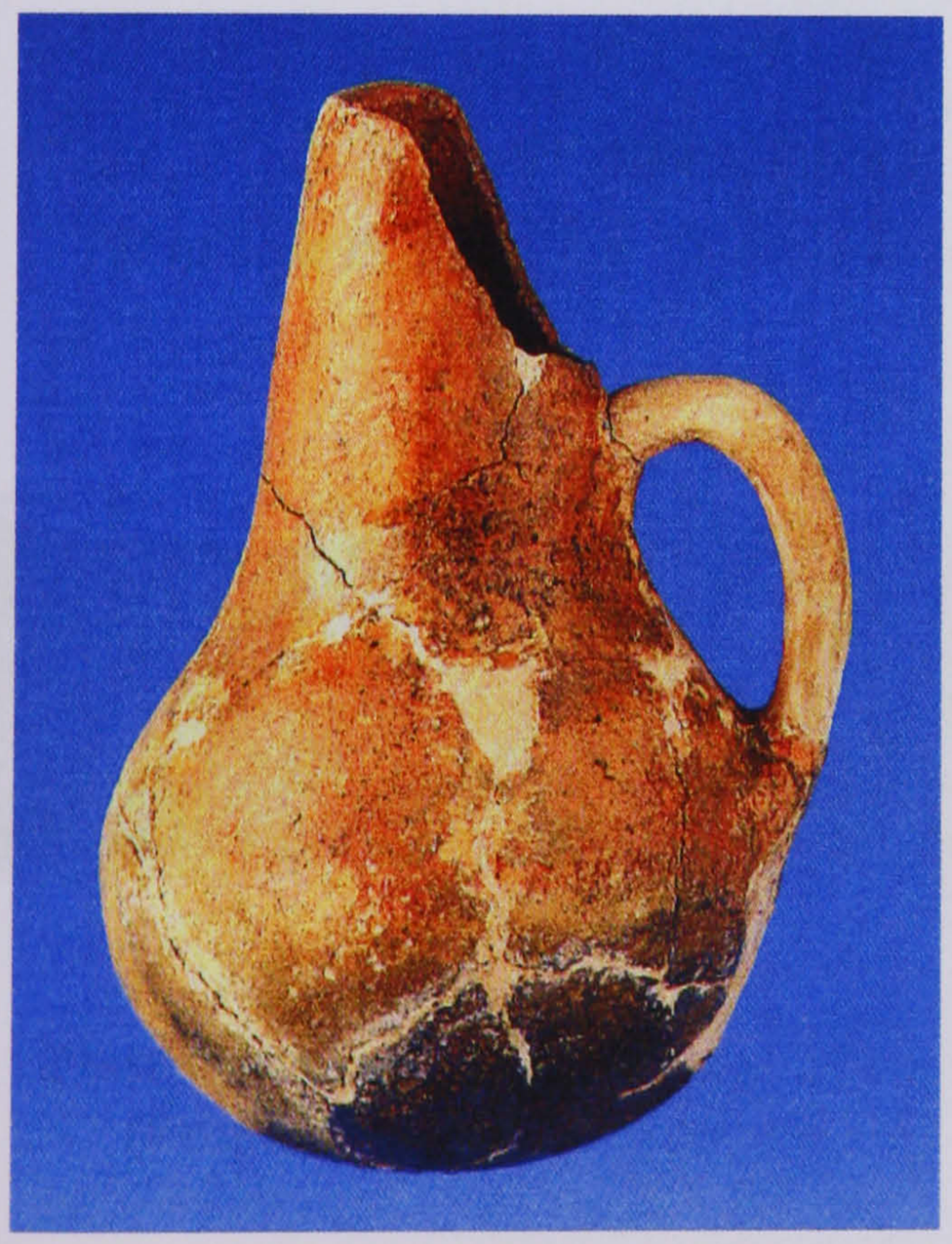


Plate 34a: Pottery from Dodoni (from Wardle 1977: fig. 11cont.)



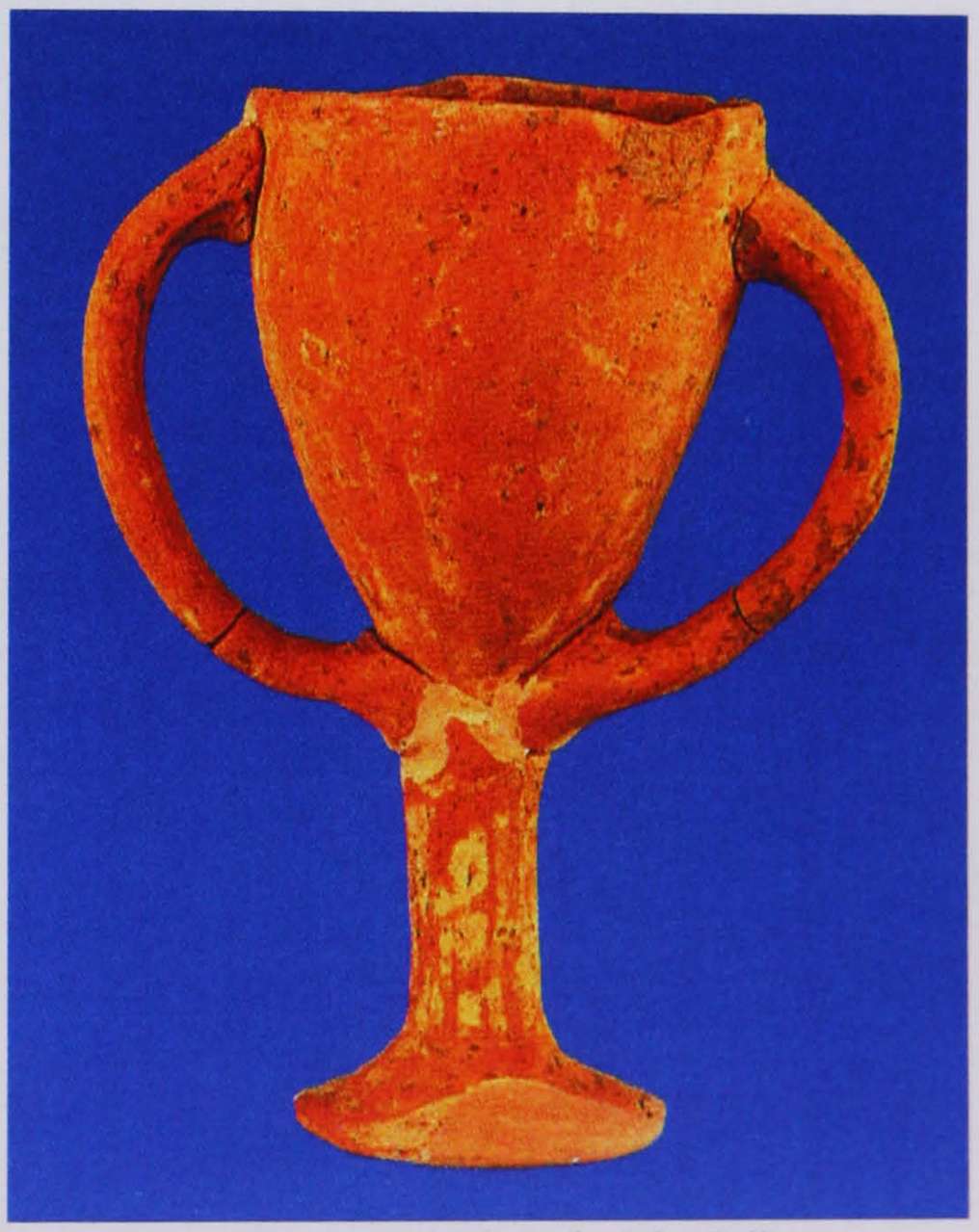


Plate 34b, c: Pottery from Dodoni (from Hammond 1997b: pl. 23, 24)

Plate 34a-c: Finds from Dodoni in Ioannina-Dodoni district.

PLATE 35

Plate 35a, b: Pottery from Dodoni (from Soueref 45I,II)

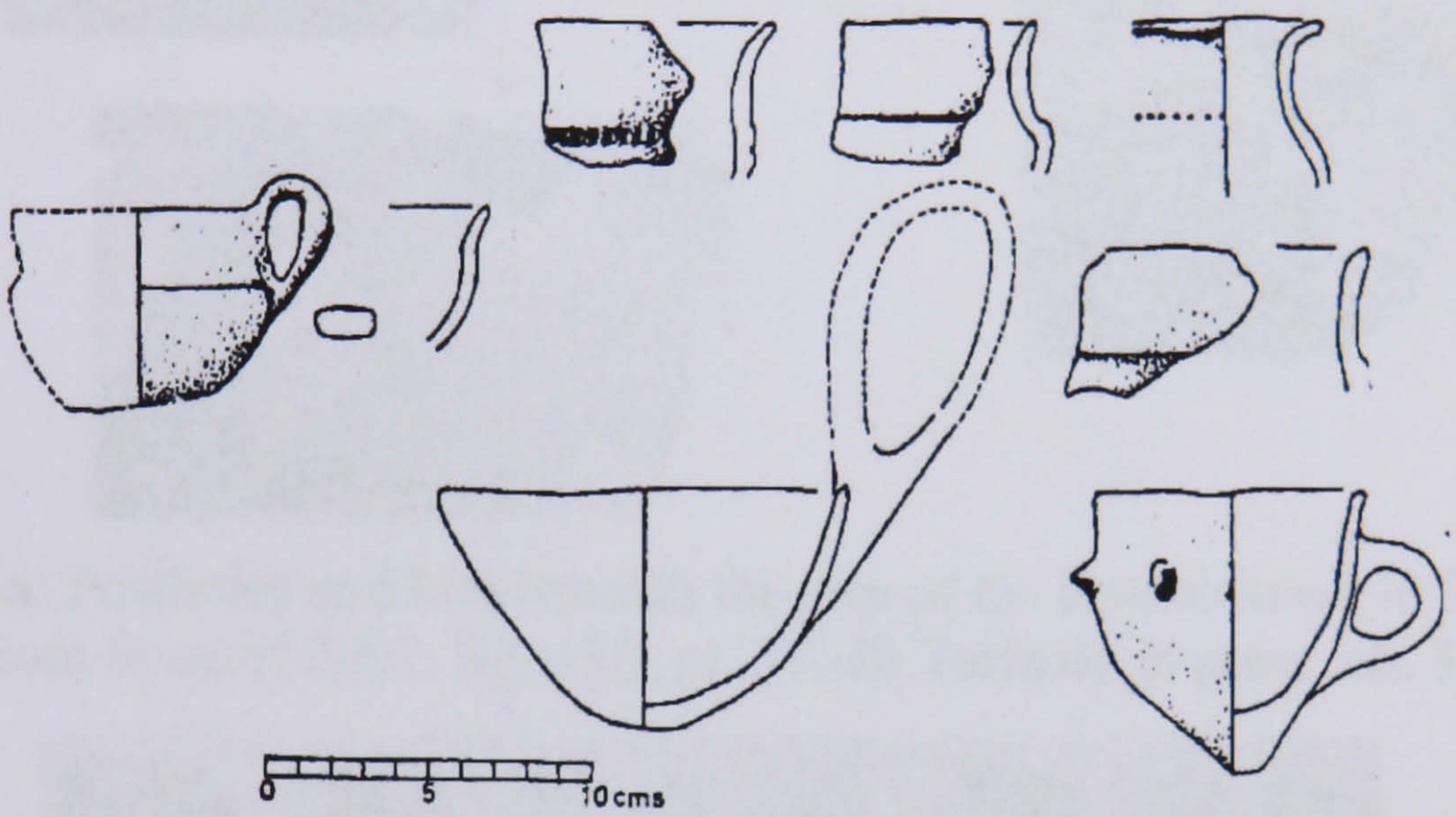


Plate 35c: Pottery from Dodoni (from Wardle 1977: fig. 12 : 589-594, 596-597)

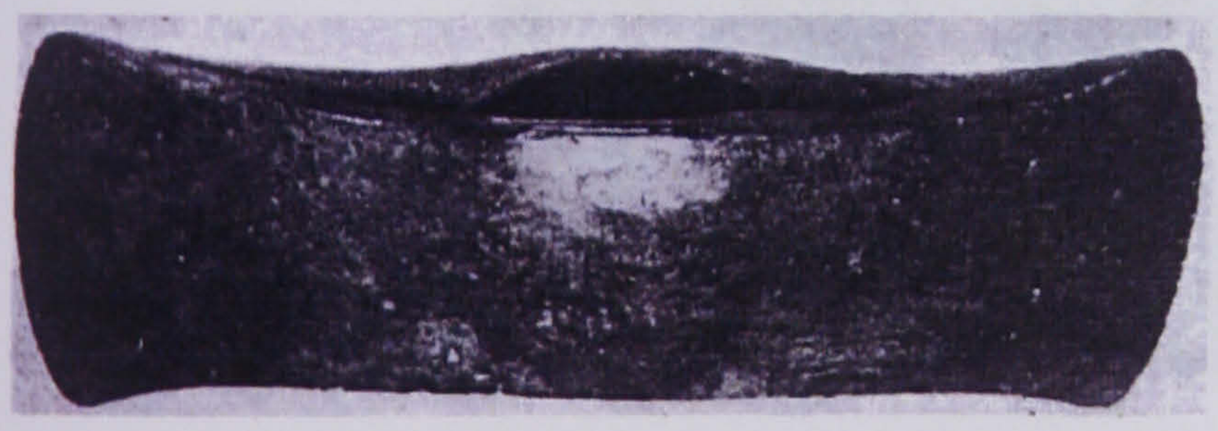


Plate 35d: Double axe from Dodoni (from Soueref 2001: pl. 56V)

Plate 35e: Bracelets from Dodoni (from Hammond 1997b: pl. 27)

Plate 35a, e: Finds from Dodoni in Ioannina-Dodoni district.

PLATE 36

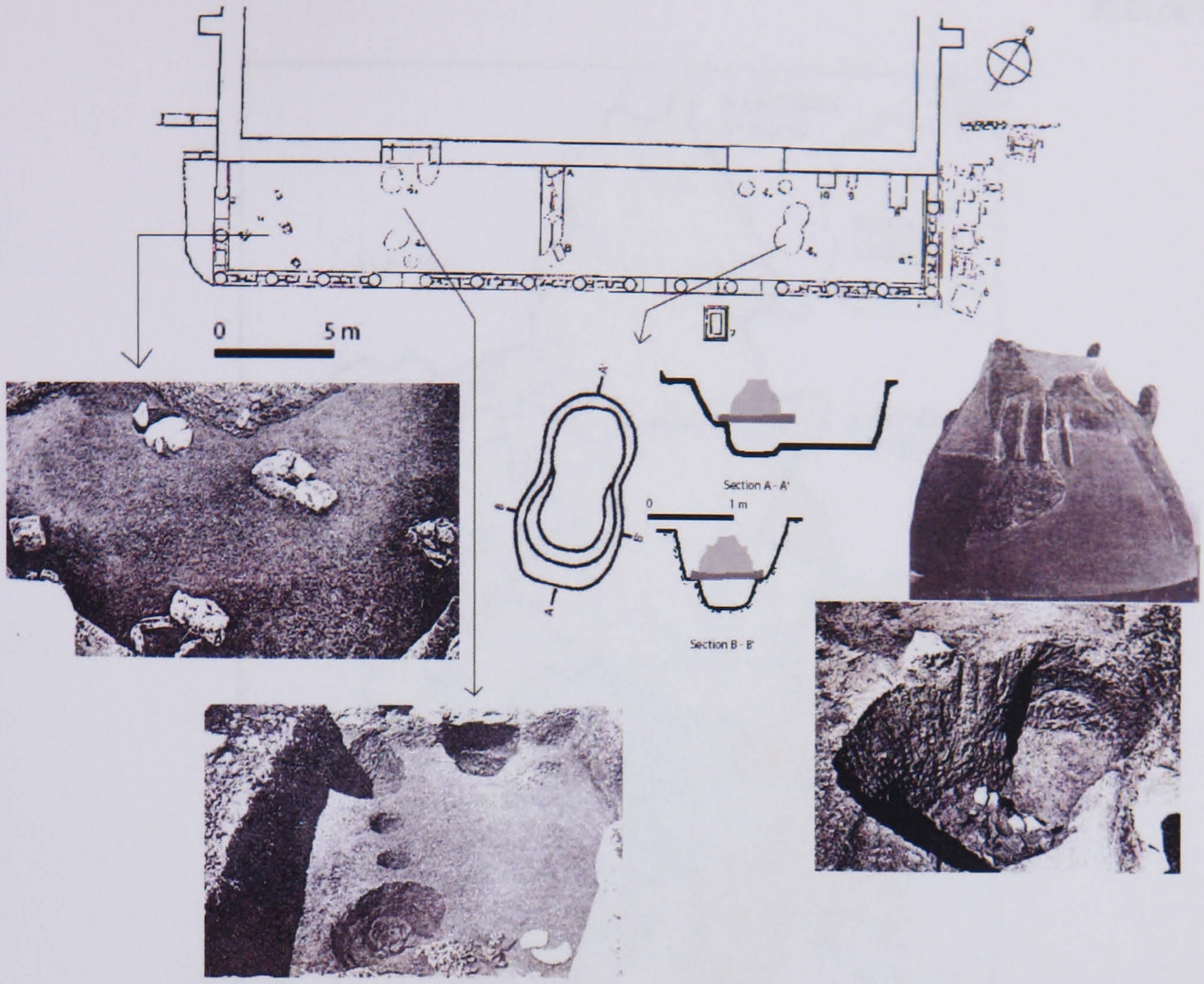


Plate 36a: Postholes and kiln beneath the stoa of the Bouleuterion in Dodoni (from Soueref 2001: fig. 13II, pl. 35I-II; Tartaron in press, ch. 3)

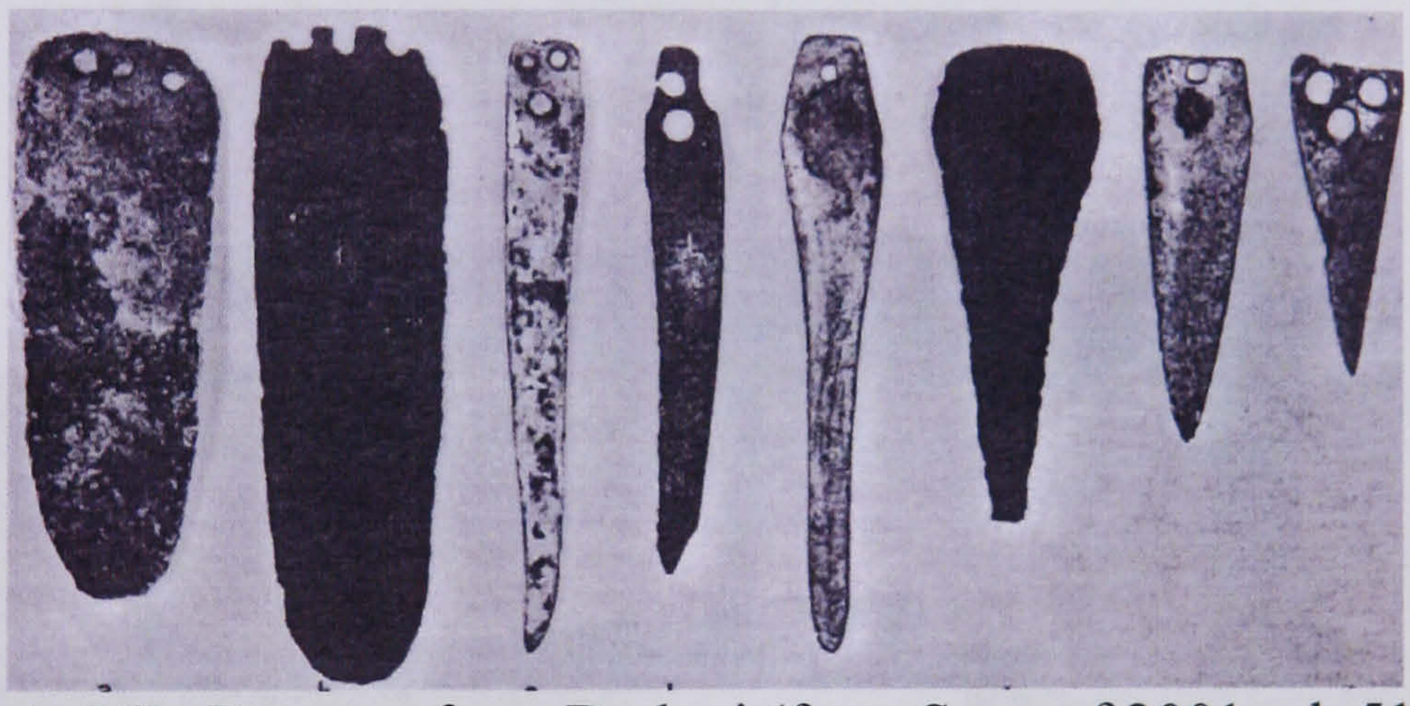


Plate 36b: Daggers from Dodoni (from Soueref 2001: pl. 51II)

late 36c: Spear-head from Dodoni (from Soueref 2001: pl. 55g)

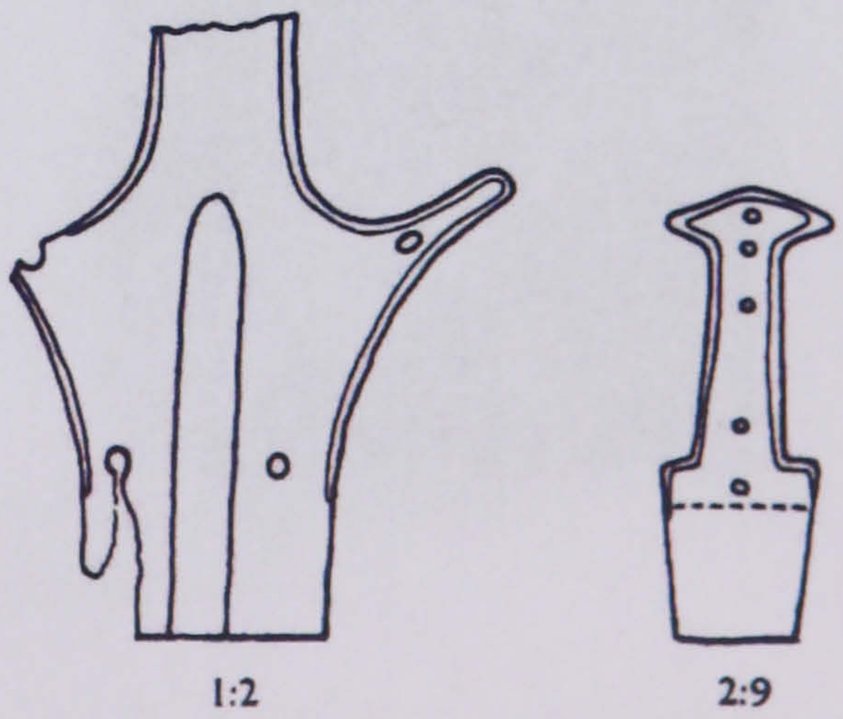


Plate 36d: Swords from Dodoni (Hammond 1967: fig. 19e-f)

Plate 36a-d: Finds from Dodoni in Ioannina-Dodoni district.

PLATE 37

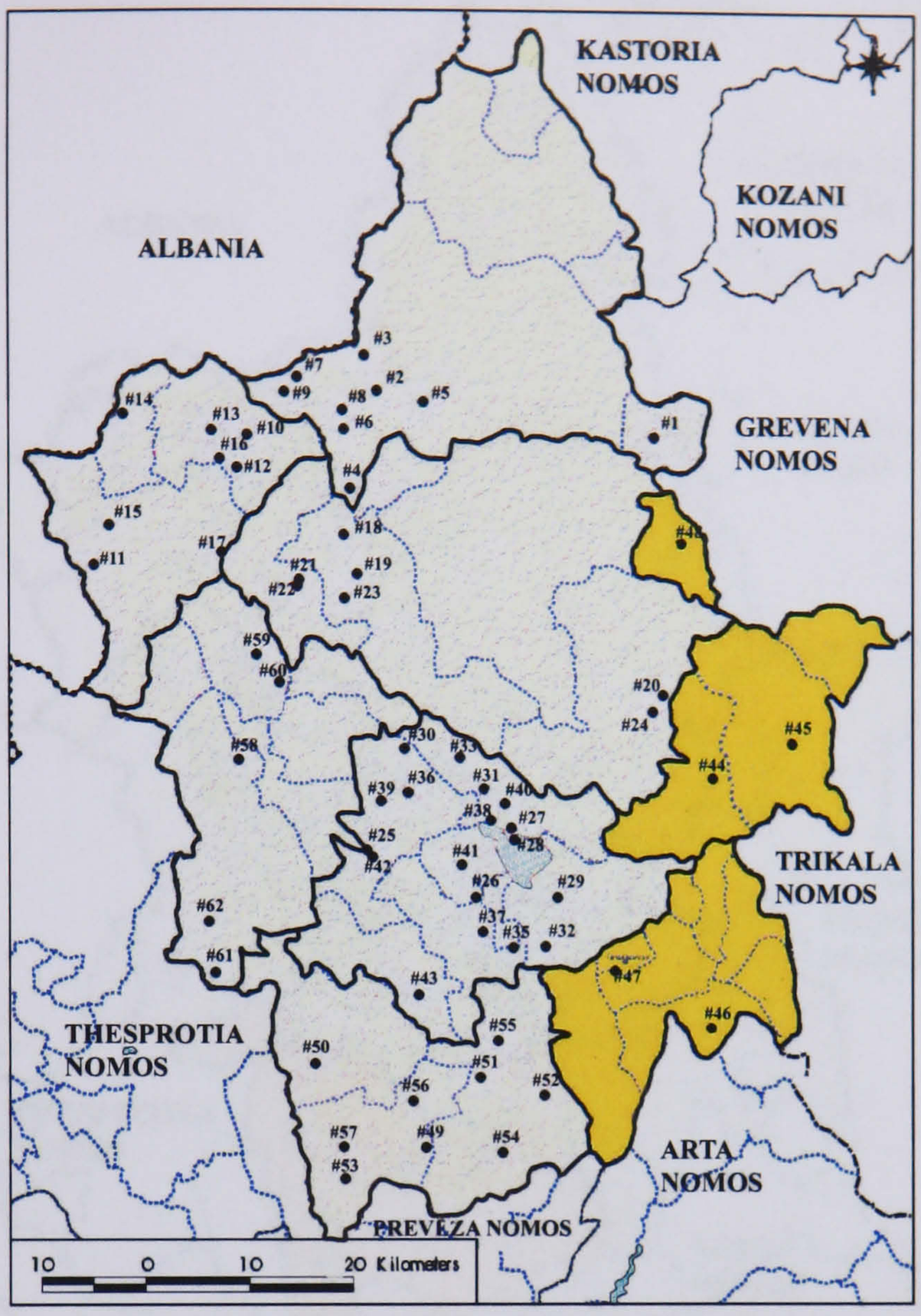


Plate 37a: West Pindos/Arachthos district

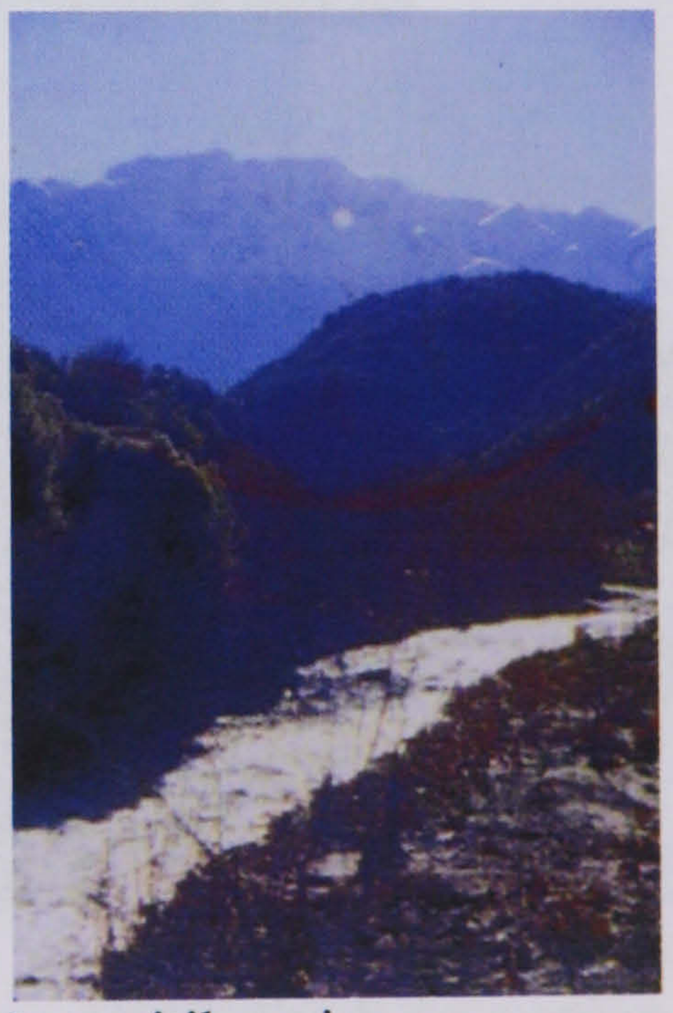


Plate 37b, c: Arachthos river and Metsovitikos river (Nitsiakos & Arapoglou 2001: 93).

Plate 37a-c: The West Pindos / Arachthos district.

PLATE 38

Plate 38a: The Upper Louros/Upper Acheron district

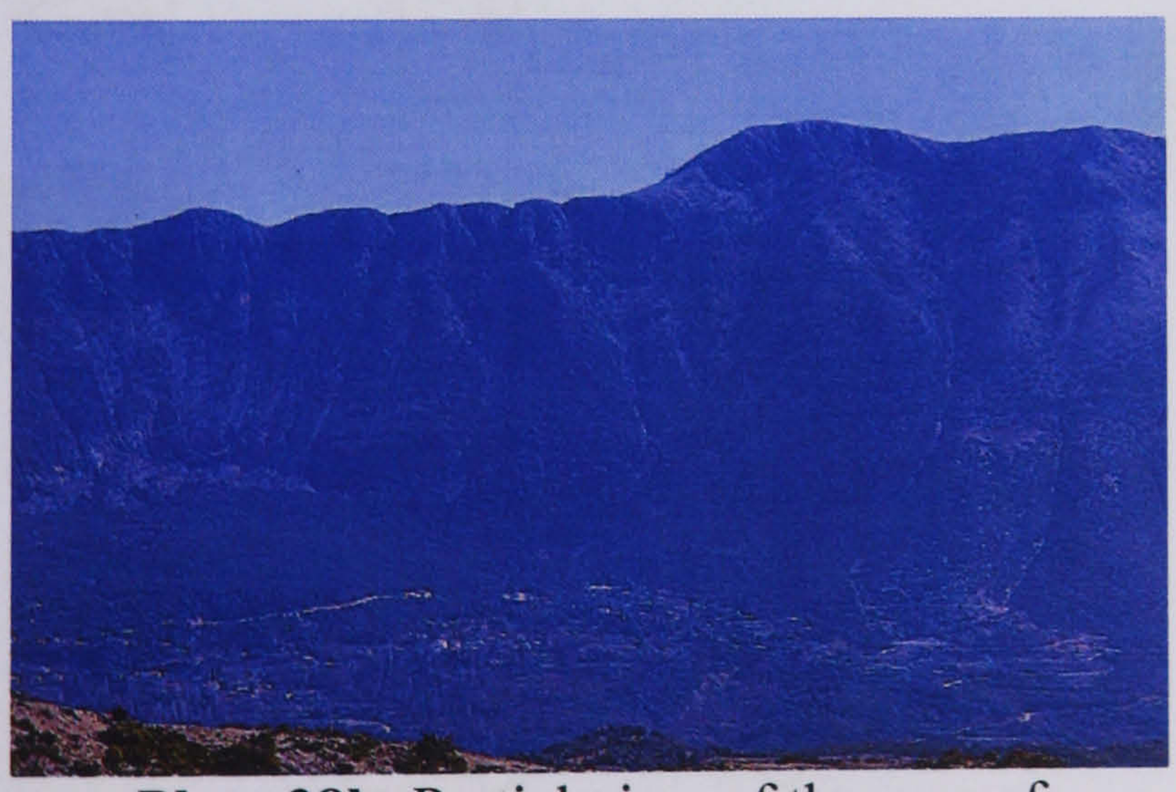


Plate 38b: Partial view of the area of Lakka Souli (Nitsiakos et al. 1998: 318)

Plate 38c: Louros' springs (Nitsiakos & Arapoglou 2001: 83)

Plate 38a-c: The Upper Louros / Upper Acheron district.

PLATE 39

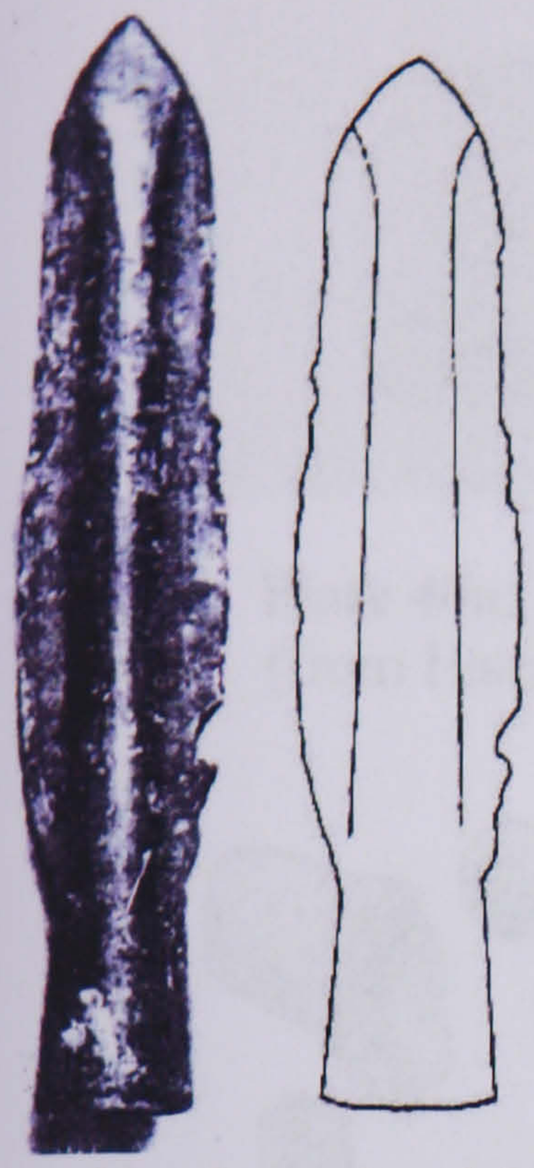


Plate 39a: Spear-head from Anthochori (from Soueref 2001: fig. 54, 24)

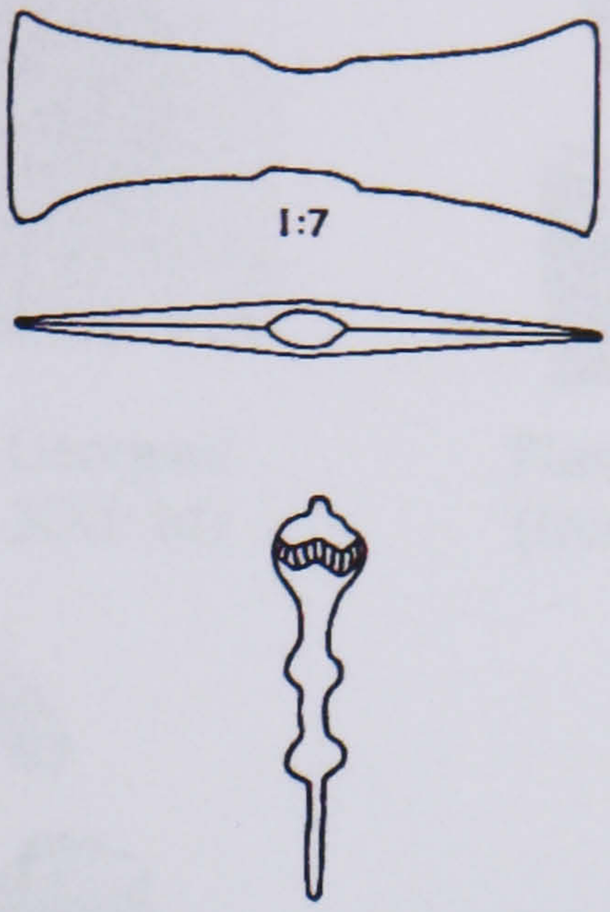


Plate 39b: Double axe and pin from Pramanta (from Hammond 1967: fig. 22:c3, 25:2)

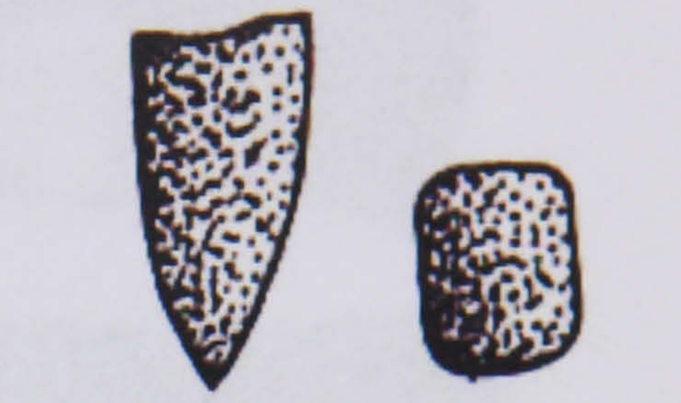
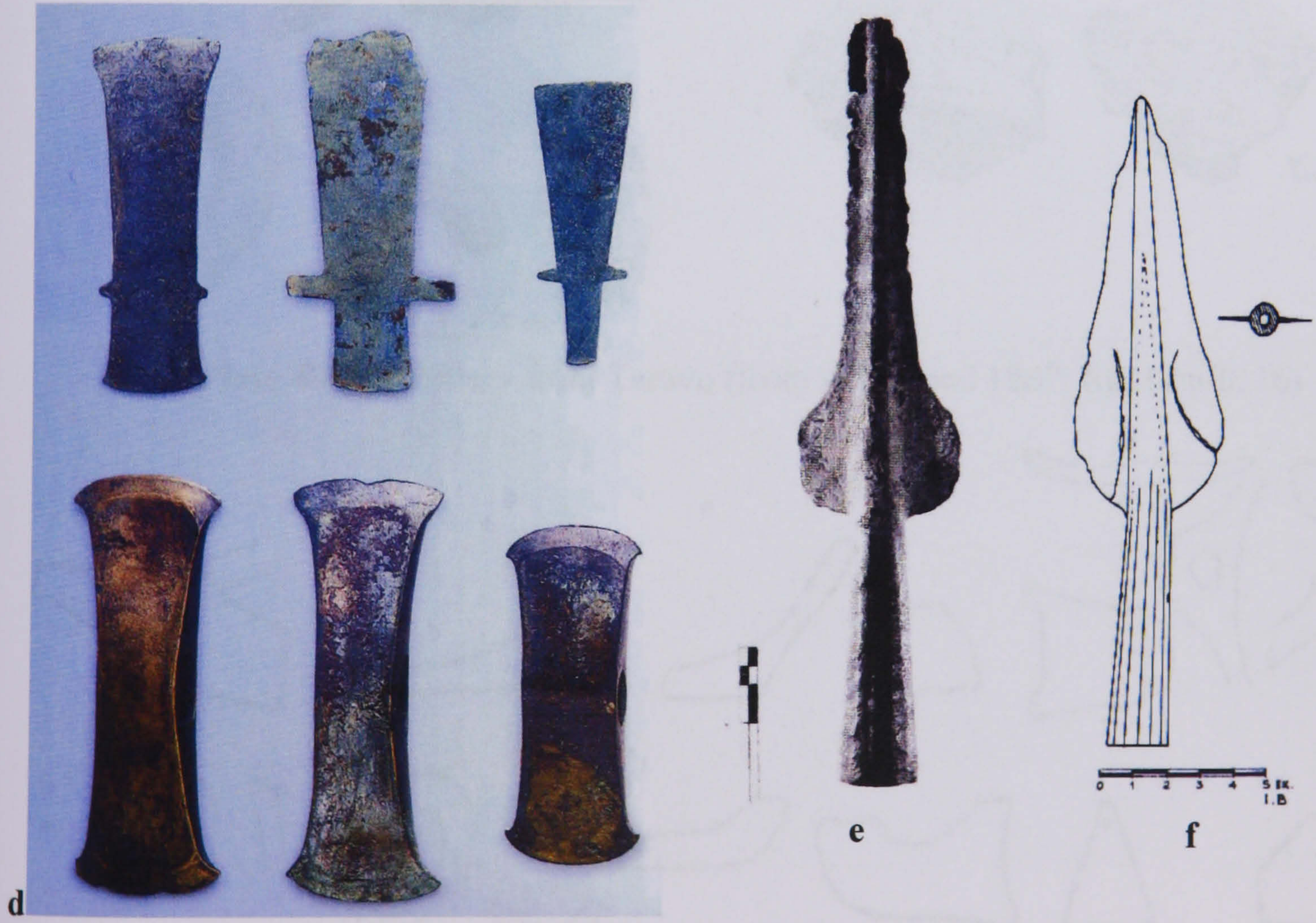


Plate 39c: Celts from Pramanta (from Hammond 1967: fig. 18: 6a-b, 7a-b)



d e f

Plate 39d: Finds from Katamachi (from Hammond 1997b: pl. 21)
Plate 39e: Spear-head from Katamachi (from Andreou 1994: fig. 26)
Plate 39f: Spear-head from Pesta Sklivanis (Vokotopoulou 1969b: fig. 7 ια)

Plate 39a-f: Finds from Anthochori and Pramanta (West Pindos – Arachthos) and from Katamachi and Pesta Sklivanis (Upper Louros – Upper Acheron).

PLATE 40

Plate 40a: Stone axe from Georgani (from Hammond 1967: pl. XXI: bI)

Plate 40b: Double axe from Terovo (from Soueref 2001: fig. 56VI-VII)

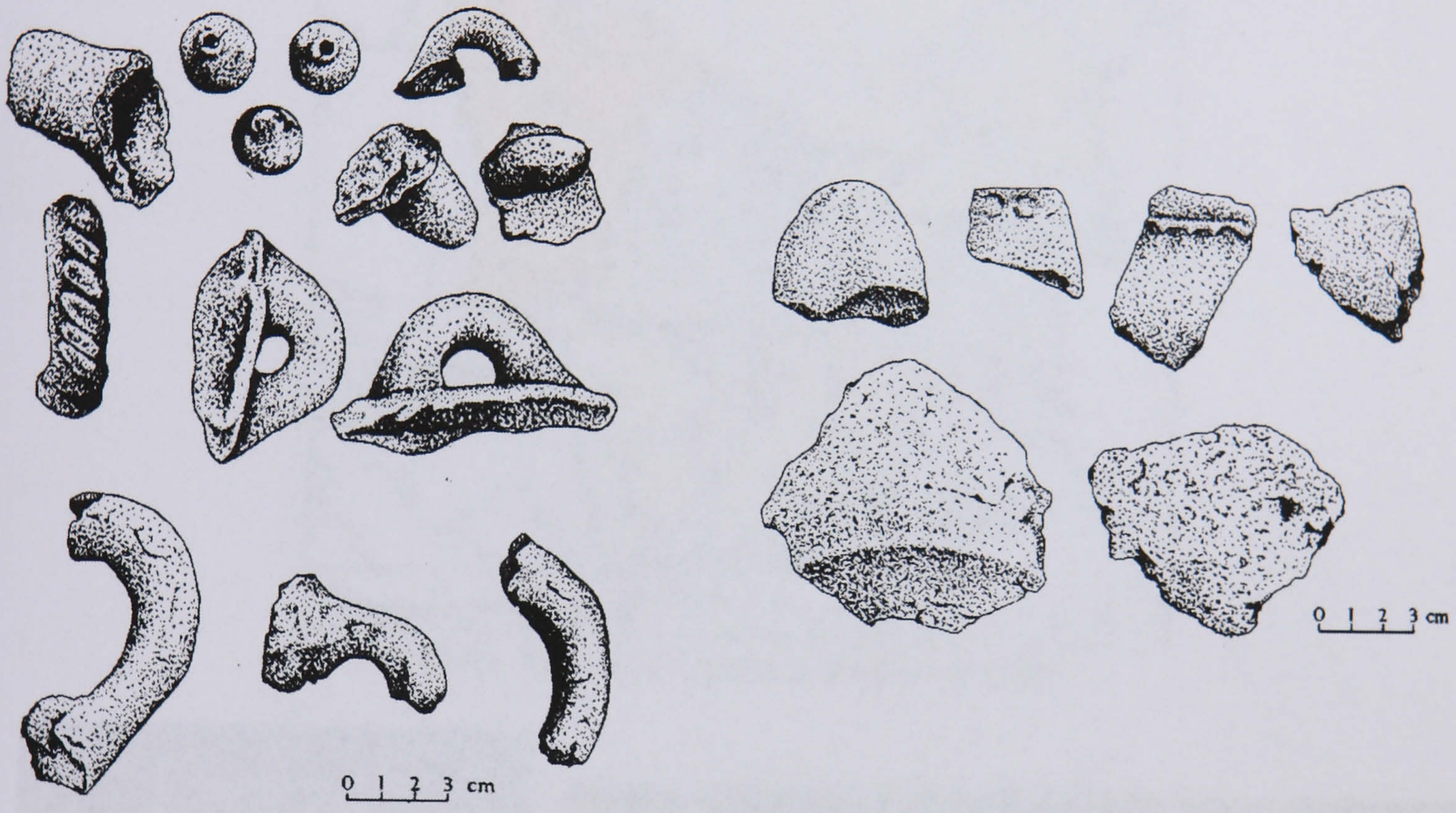


Plate 40c, d: Pottery from Terovo (from Hammond 1967: fig. 11:a-b, 16)

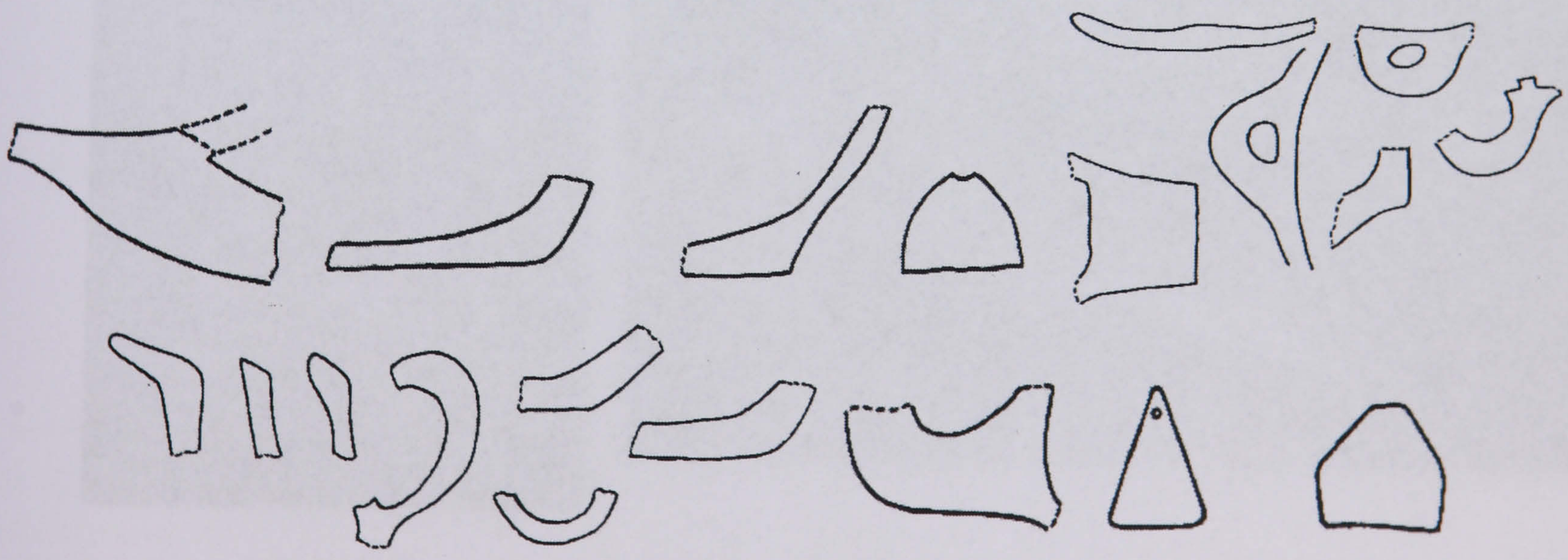


Plate 40e: Pottery from Terovo (from Hammond 1967: fig. 13: b1-b20)

Plates 40a-e: Finds from Georgani and Terovo in the Upper Louros – Upper Acheron district.

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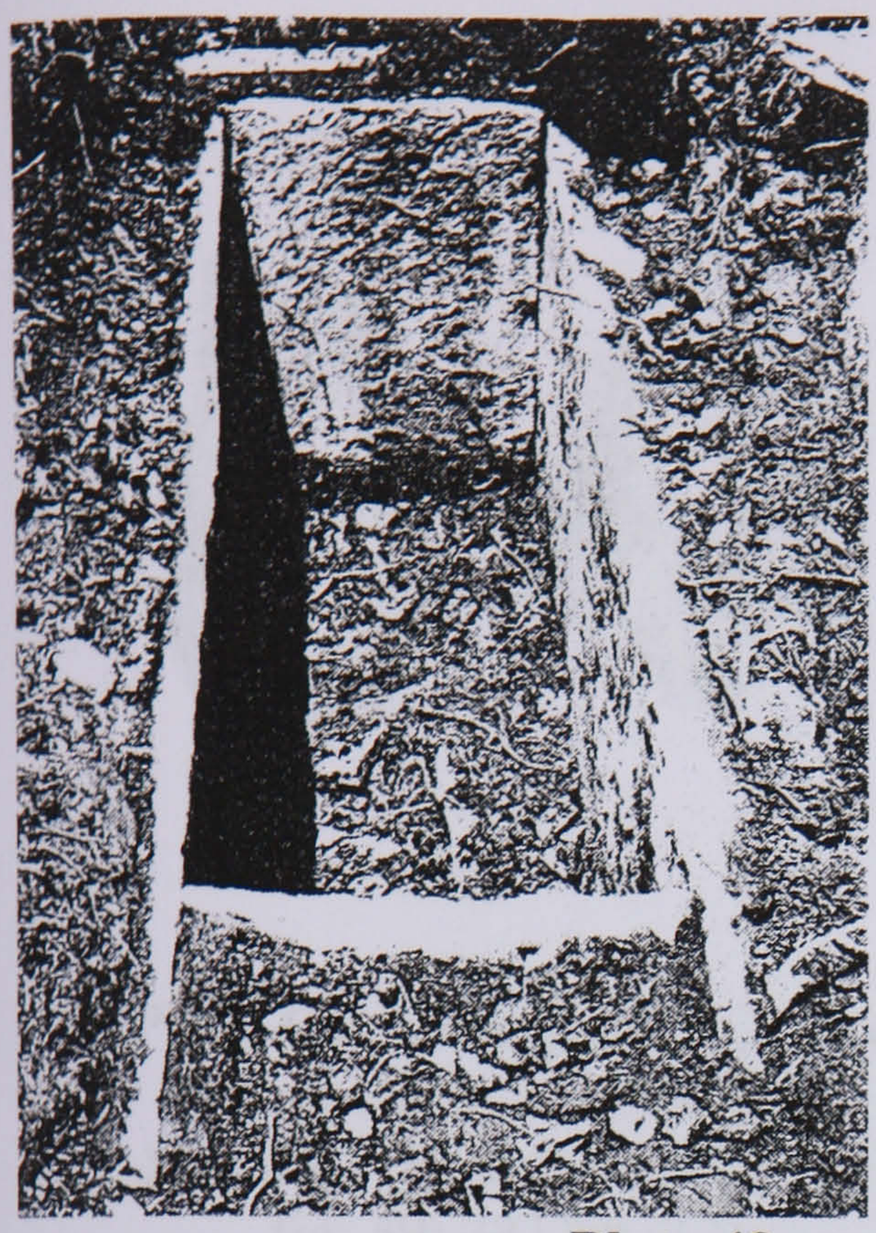
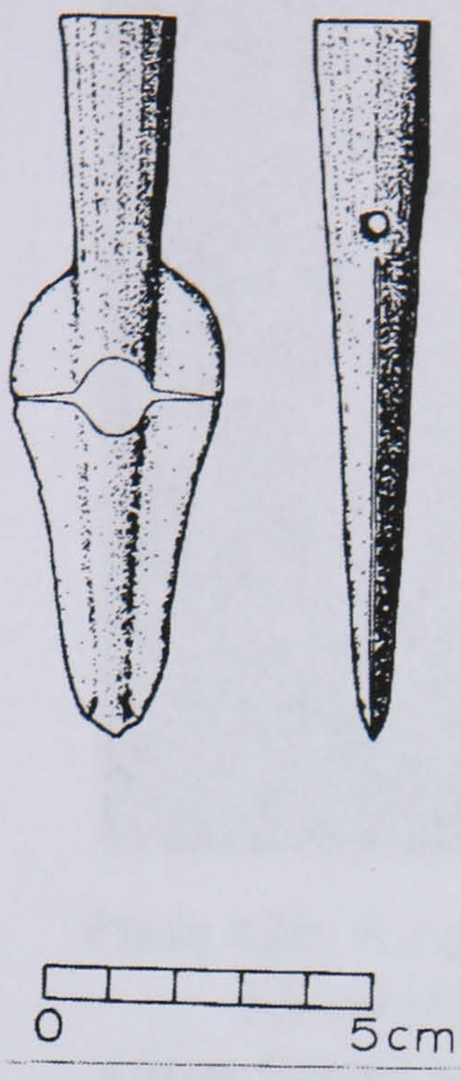
Plate 41a: The Upper Kalamas district

Plate 41b, c: The Kalamas river (Nitsiakos & Arapoglou 2001: 59, 60)

Plate 41a-c: The Upper Kalamas district.

PLATE 42





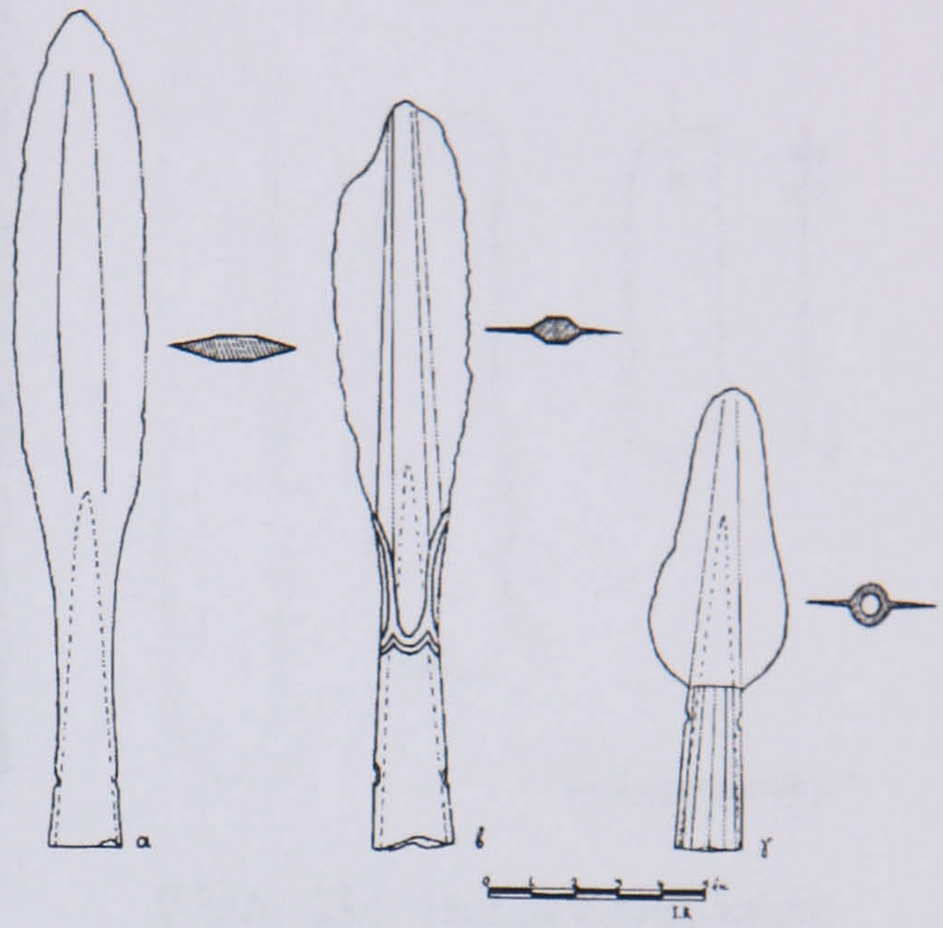


Plate 42a-c: Cist grave and spear-heads from Mazaraki
(from Wardle 1972: fig. 14, Wardle 1977: fig. 14: 1066; Vokotopoulou 1969b: fig. 6)

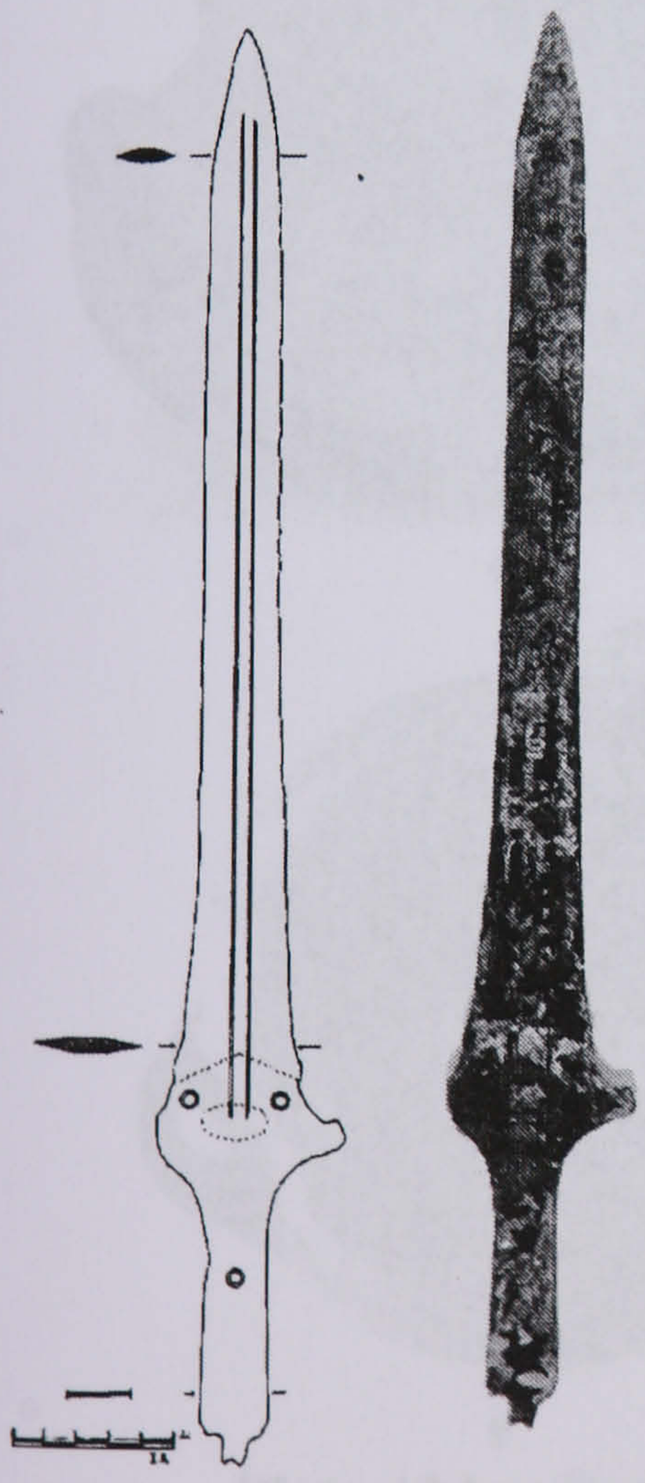


Plate 42d: Sword from Mazaraki
(from Vokotopoulou 1969b: fig. 4
and Soueref 2001: fig. 53III)

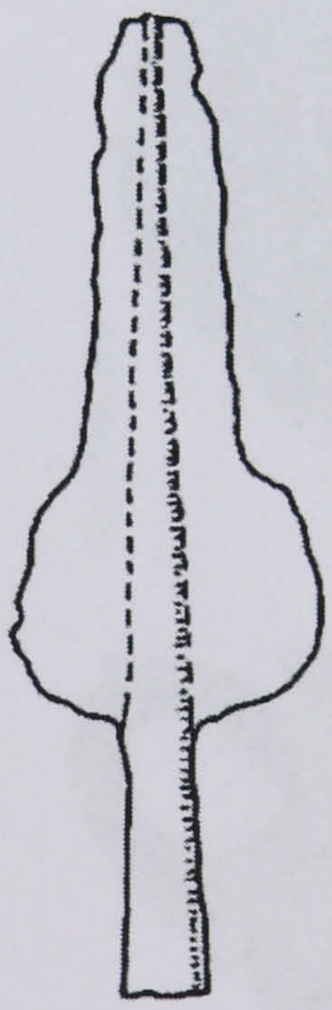


Plate 42e: Spear-head from
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1967: fig. 23I)

Plate 42f: Spear-head
from Vereniki
(from Katsadima 1996: pl. 108γ)

Plate 42a-f: Finds from Gribiani, Vereniki and Mazaraki in the Upper Kalamas district.

PLATE 43

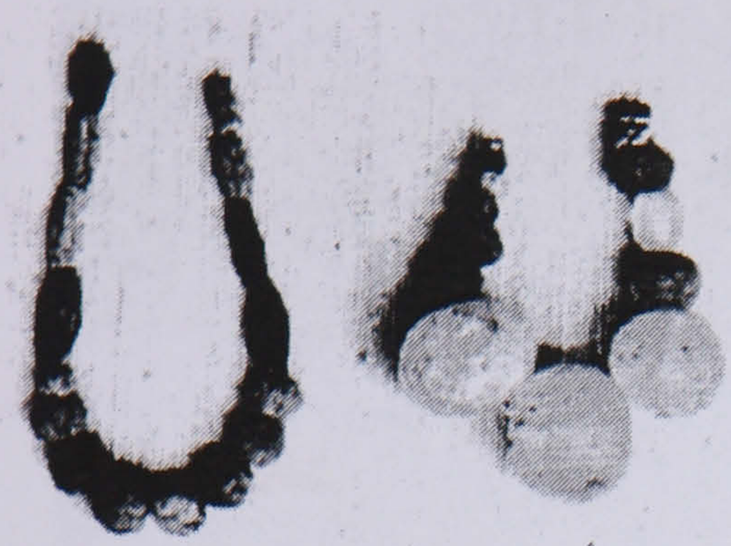


Plate 43a: Chalcedony, faience and rock crystal beads from Mazaraki (from Soueref 2001: fig. 59: 3311-3313)

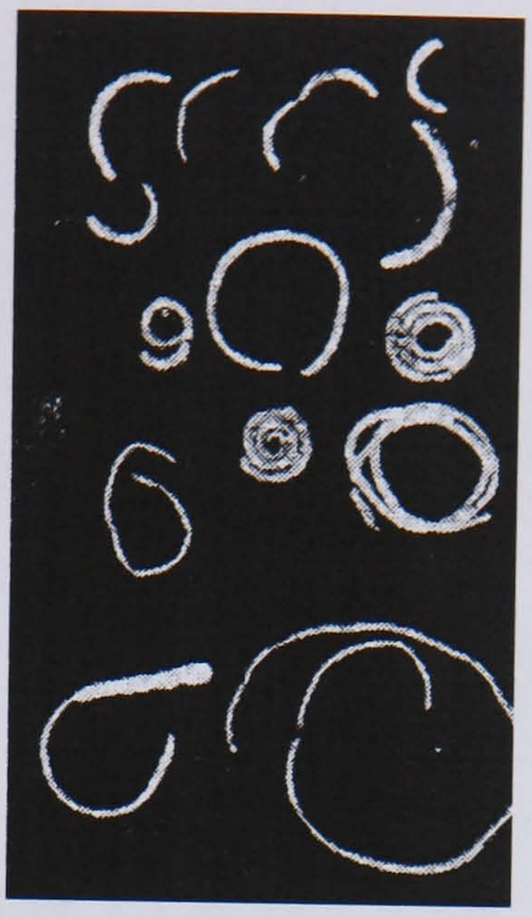


Plate 43b: Rings from Mazaraki (from Papadopoulos 1976: pl. 7: 3315)

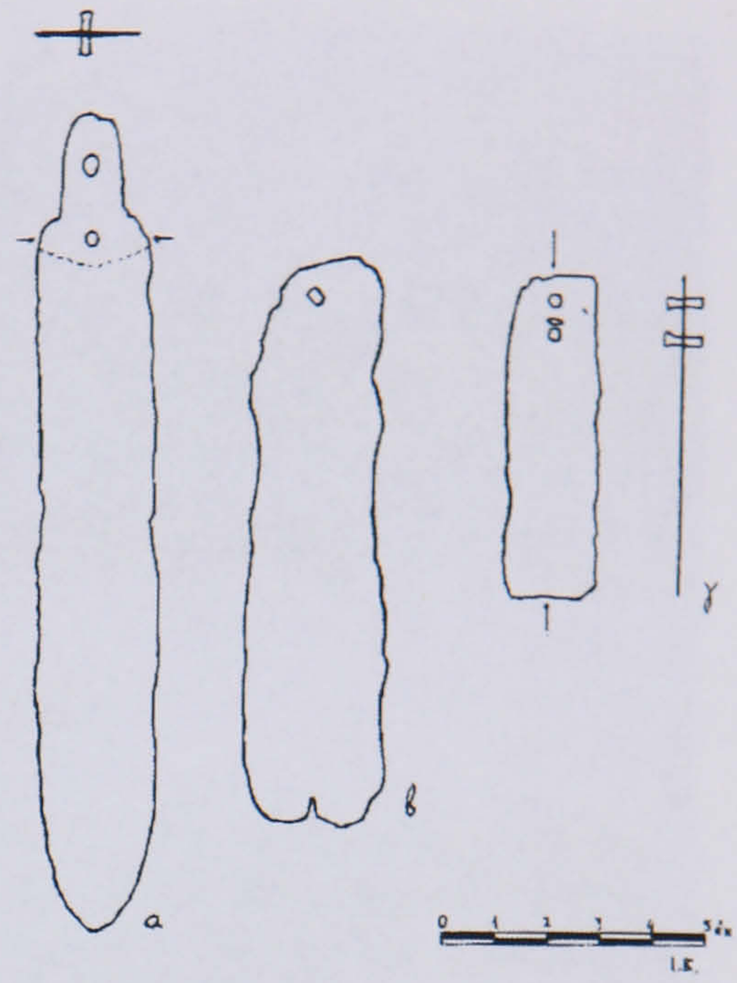
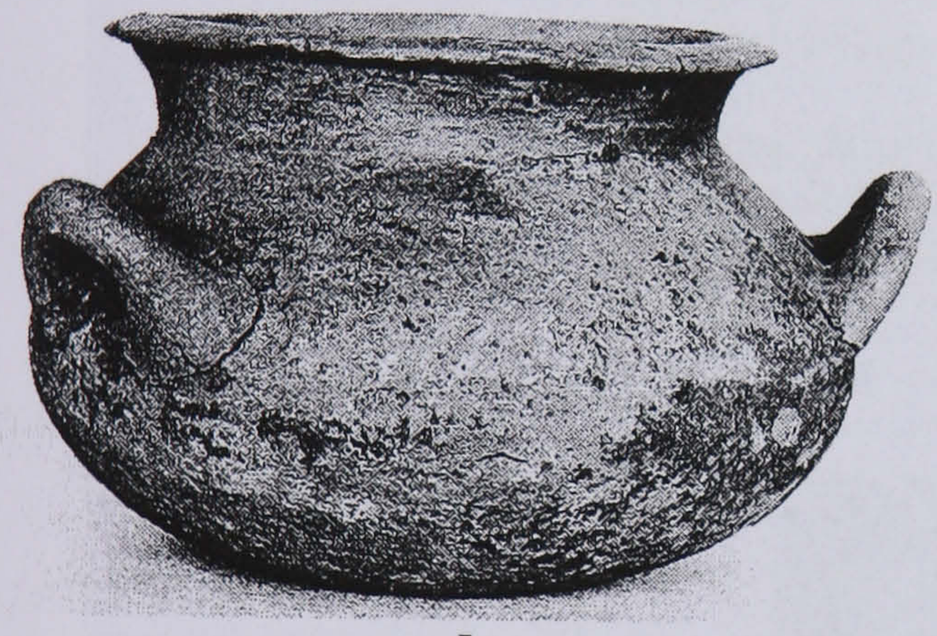


Plate 43c: Dagger and knife from Mazaraki (from Vokotopoulou 1969b: fig. 5)



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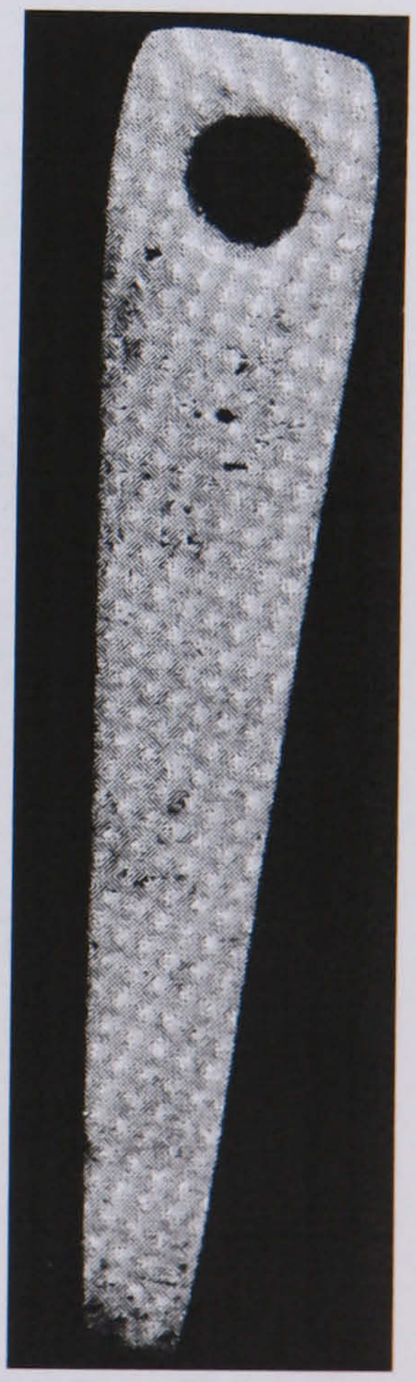

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Plate 43d-g: Pottery from Mazaraki (from Soueref 2001: fig. 49I,II, 41I, 48I)
Plate 43h: Whetstone from Mazaraki (from Papadopoulos 1976: pl. 10γ: 3317)

Plate 43a-h: Finds from Mazaraki in the Upper Kalamas district.

THE LATE PREHISTORY OF THE IOANNINA NOMOS

Archaeological topography:

a site record

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Content: This website contains information on the archaeology (finds, discussion) and the topography (brief descriptions, GPS readings) of the late prehistoric sites of the Ioannina nomos, Epirus, NW Greece (ca. 2000-950 B.C.). References, maps and plates accompany the data.

Aims: to make information available and accessible, to provide data in a user-friendly format, to offer an expandable and exploitable web-oriented database, to promote the study of the area.

Target group: archaeologists, researchers, teachers, educators and students, any individual interested in this field.

Structure: Sites have been divided and presented in seven geographical districts, always shown as part of the column on the left. A map for every district offers an indication of the position of every site. A site-index and a reference page are also available.

The lake of Ioannina from the east: view from the Mitsikeli Mountain

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Plate 44: Homepage of the LPIN website.

THE LATE PREHISTORY OF THE IOANNINA NOMOS

The Upper Kalamas district

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Late Prehistoric Locations

Late prehistoric sites in the Ioannina nomos: the Upper Kalamas district highlighted.

Despotiko Ioanninon (also: Dhespotikon, Δεσποτικό Ιωαννίνων)

[no drawings / pictures available] [map reference #58]

Gribiani (also: Γρίμπιανη, Γκρίμπιανη, Γρίβιανη, Αρετή)

[plates] [map reference #59]

Mazaraki (also: Μαζαράκι)

[plates] [map reference #60]

Vereniki (also: Βερενίκη)

[plates] [map reference #61]

Zalongo (also: Ζάλογκο)

[no drawings / pictures available] [map reference #62]

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Plate 45: The Upper Kalamas district webpage of the LPIN website.

THE LATE PREHISTORY OF THE IOANNINA NOMOS

Gribiani

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IN THE UPPER KALAMAS DISTRICT

Topography

Map reference (GPS):

Degrees: 39.82861111 N / 20.58194444 E DMS: 39° 49' 43 N / 20° 34' 55 E

UTM : Northing: 4408818.5 , Easting: 464225.72 , Zone: 34S

Elevation: 386 masl.

Demos: Ano Kalama.

Area (description): lowland zone of Upper Kalamas.

Accessibility: vicinity of modern village of Areti, 5 km south of Parakalamos (the capital of the demos of Ano Kalama).

Also known as: Γρίμπιανη, Γκρίμπιανη, Γρίβιανη, Αρετή.

Archaeology

Degree of work: chance find.

Architecture: -

Burials: cist grave.

Pottery: -

Lithic: -

Bronze: 1 spear-head.

Other finds: -

Chronology: Late Prehistory.

Bibliography:

Dakaris 1956: 131; **Hammond** 1967: 340, 355, 360; **Wardle** 1972: 285; 1977: 158, 193; **Tartaron** 1996: 61, 455.

Plates

Discussion:

Gribiani is known from a bronze spear-head dated to LHIIIB-C, delivered to the archaeological authorities in the 1950s by the teacher of the modern village of Gribiani, who stated that it was from a cist-grave in the area. The cist-grave has not yet been located.

The spear-head has been connected to the Urnenfelder Culture, Hallstatt A period of Eastern Europe (1240-1000 BC) (Foltiny 1955; Vokotopoulou 1969b: 195-196).

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Plate 46: The Gribiani (site # 59) webpage of the LPIN website.

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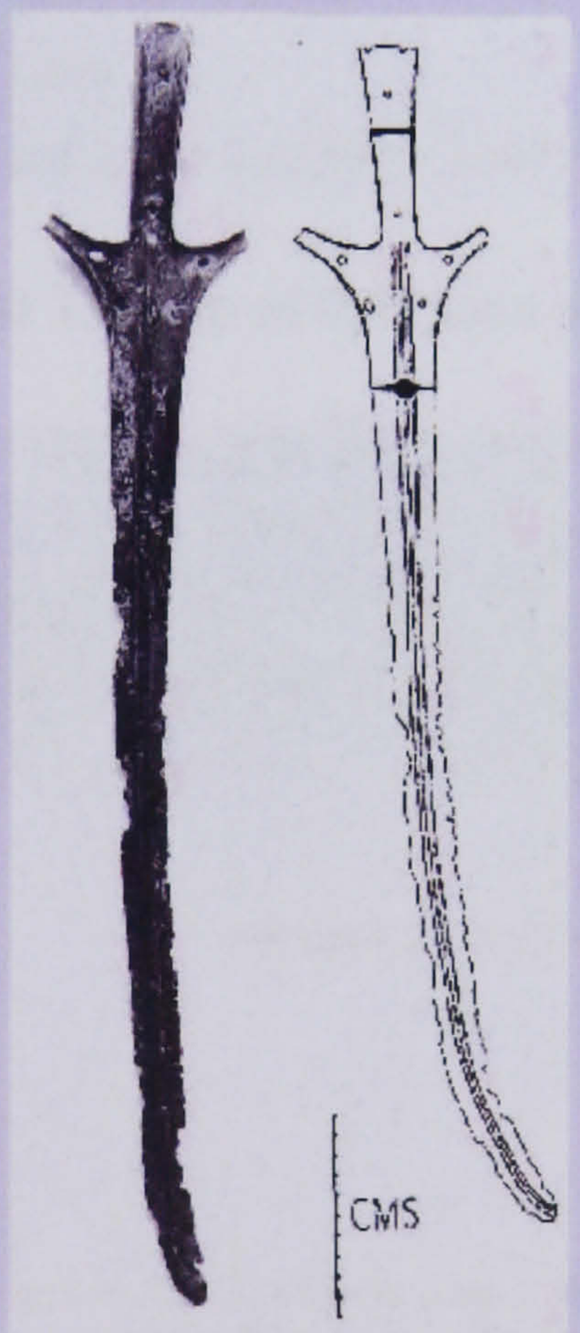
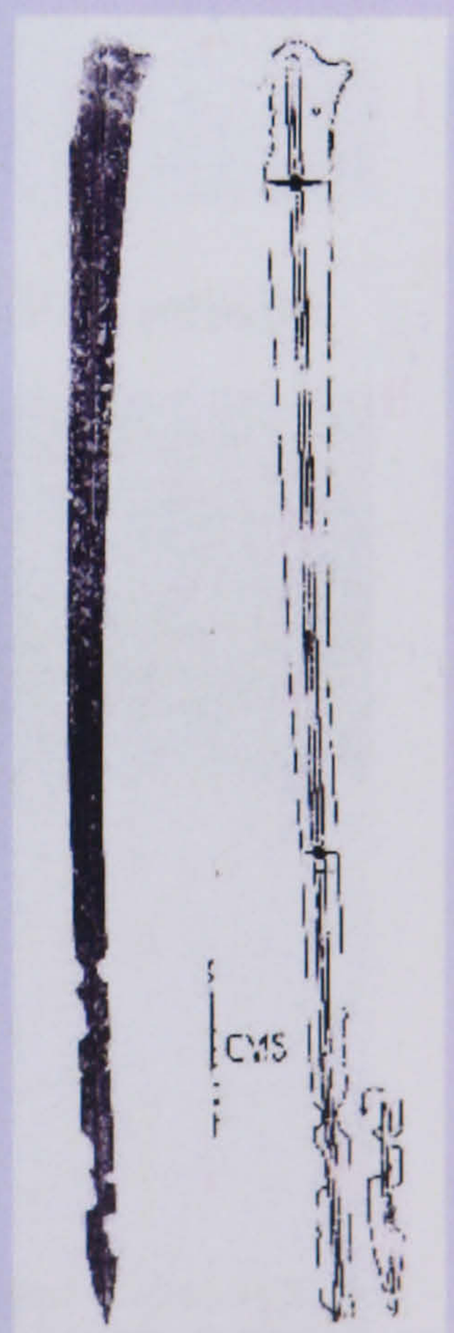
Mesogephyra

(also: Mesoyefira, Μεσογέφυρα)

IN THE KONITSA DISTRICT





Sword from Mesogephyra (from Soueref 2001: fig. 53:I, 22:3)

Sword from Mesogephyra (from Soueref 2001: fig. 53:II, 22:3)

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Plate 47: The Mesogephyra plates (site # 7) webpage of the LPIN website.

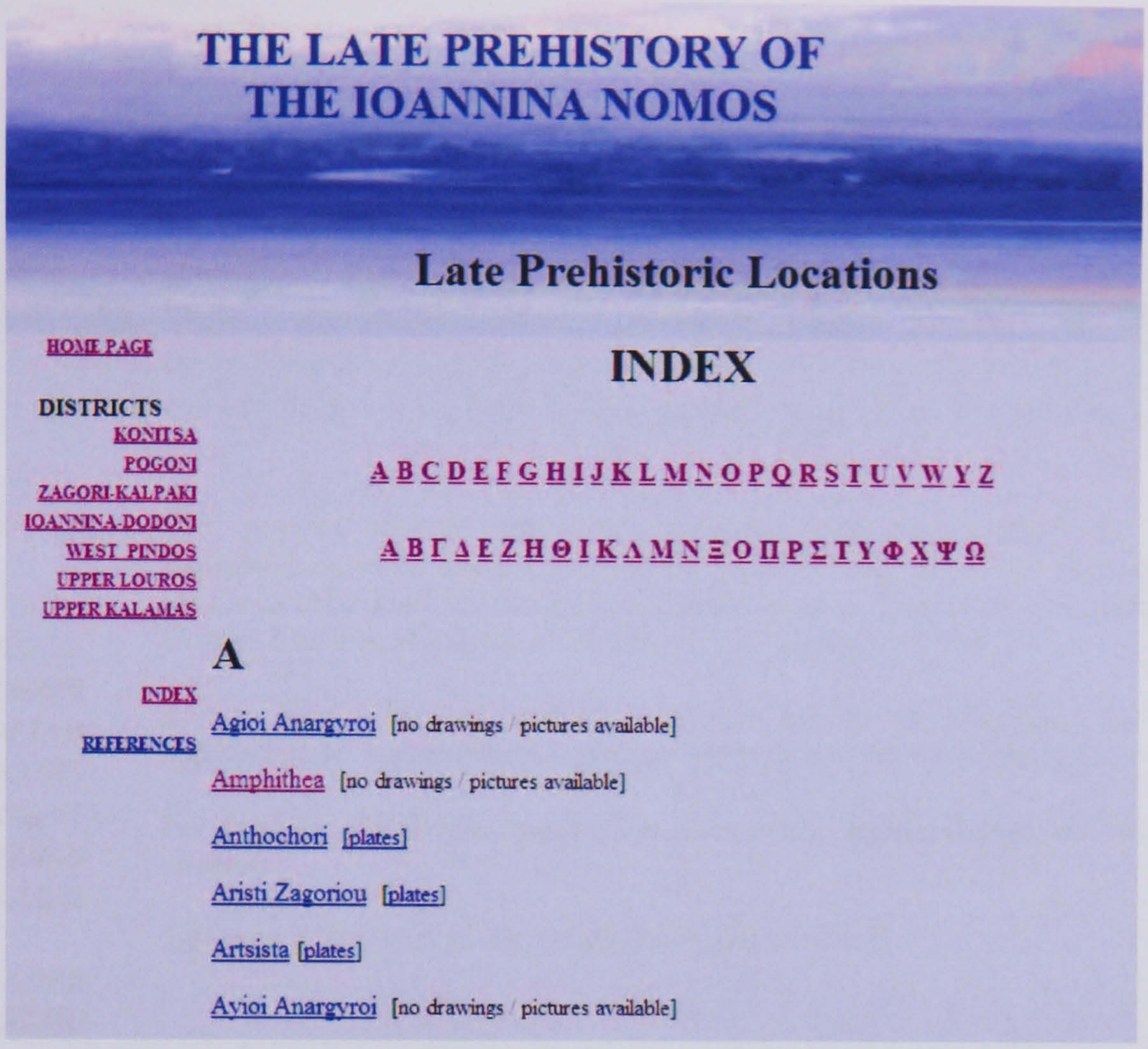


Plate 48a: The top of the index webpage of the LPIN website

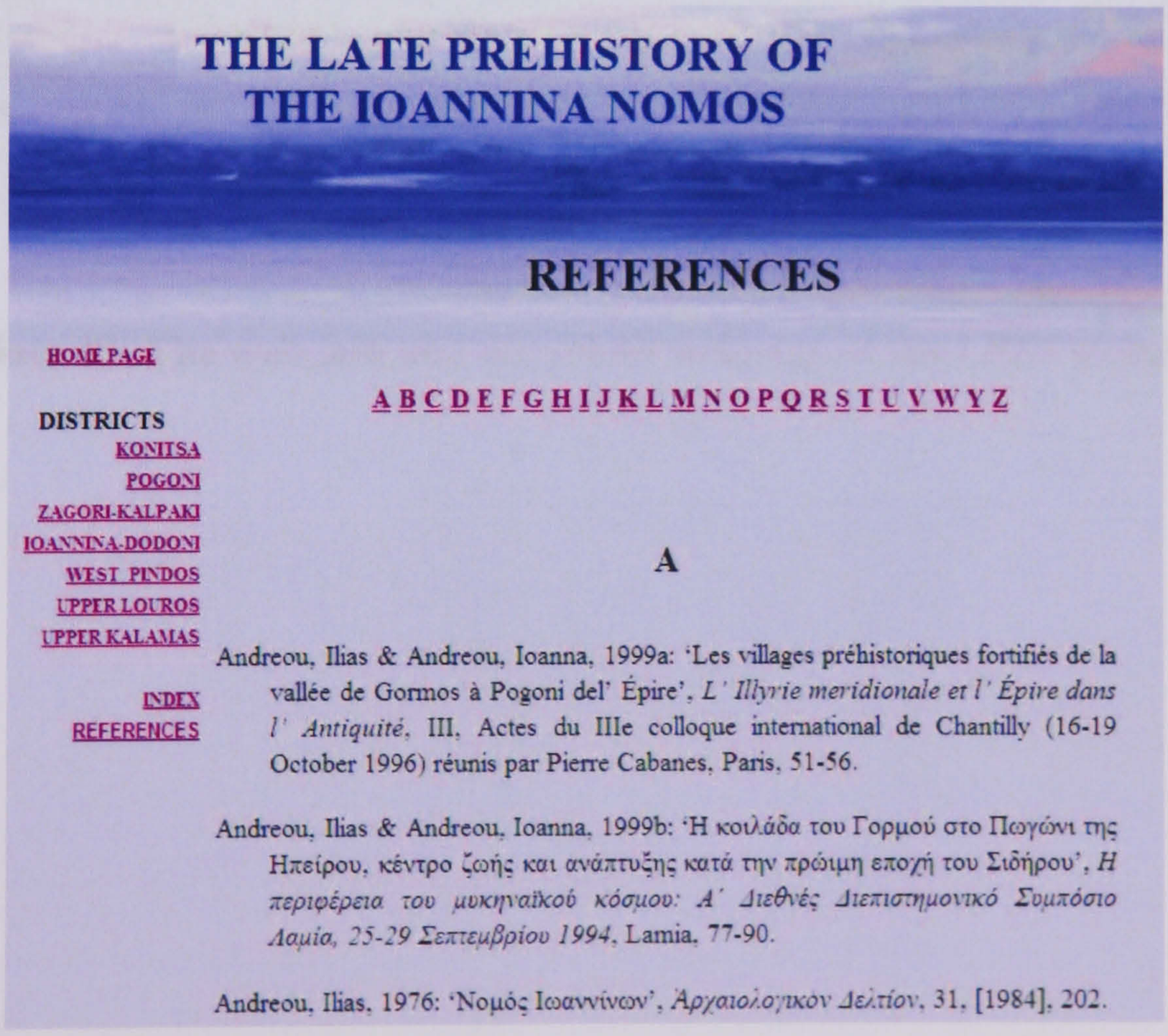
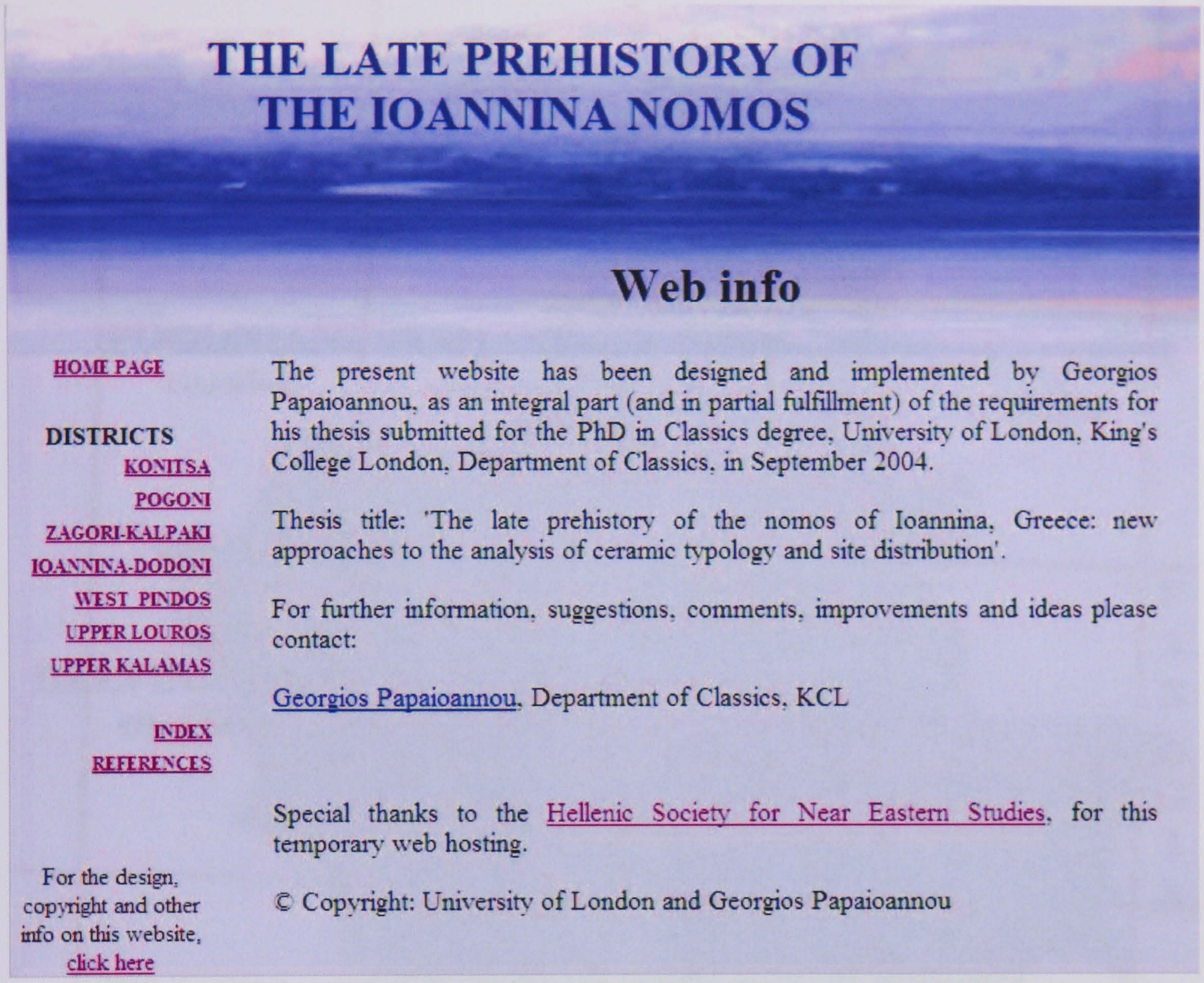


Plate 48b: The top of the references webpage of the LPIN website

Plate 48a-b: The top of the index and references webpages of the LPIN website.



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The present website has been designed and implemented by Georgios Papaioannou, as an integral part (and in partial fulfillment) of the requirements for his thesis submitted for the PhD in Classics degree, University of London, King's College London, Department of Classics, in September 2004.

Thesis title: 'The late prehistory of the nomos of Ioannina, Greece: new approaches to the analysis of ceramic typology and site distribution'.

For further information, suggestions, comments, improvements and ideas please contact:

Georgios Papaioannou, Department of Classics, KCL

Special thanks to the Hellenic Society for Near Eastern Studies, for this temporary web hosting.

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Plate 49: The web info and copyright webpage of the LPIN website.

Plate 50: The 1:50000 map sheets of the Hellenic Army Geographical Service covering the Ioannina nomos: names and distribution.
(from http://www.gys.gr/greek/GR3_3_7.htm)

PLATE 51

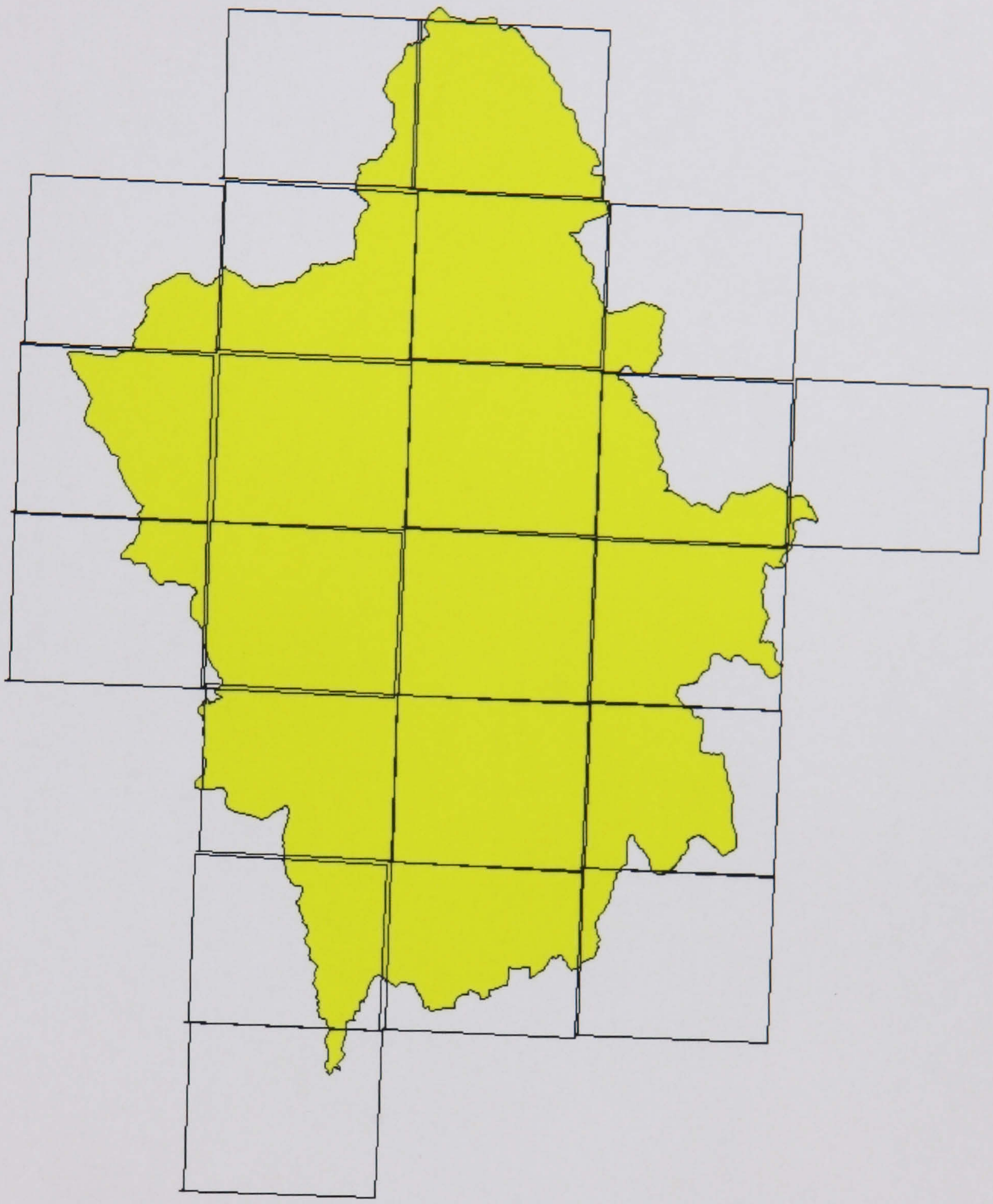

Plate 51: The 1:50000 map sheets of the Russian Military Topographic Directorate of the General Staff covering the Ioannina nomos: distribution.
(from http://www.cartographic.com/xq/ASP/AreaID.3/RegionID.111/CategoryID.5/ProductID.6/europe/greece/qx/topographic_maps.asp)

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